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The Physiological Basis for the Diet Therapy of Liver Disease[1]

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IT IS now a well accepted dictum that the diet most beneficial in cases of liver disease (hepatitis and cirrhosis) should be high in calories, proteins, and carbohydrates and low in fats. In addition, supplements to provide adequate supplies of the vitamins, especially of the B-complex, choline, or other similarly acting agents have been advocated. The development of the concepts which led to the adoption of the diet outlined above stems from the seemingly widely separated fields of physiology, biochemistry, and pathology. It is the purpose of this paper to outline the experimental data which have had a bearing on the dietary treatment of liver disease, so that the logical progression of thought on this subject may become evident.

Soon after the discovery of insulin in 1921, it became possible to study the course of experimental pancreatic diabetes in animals maintained on therapeutic doses of insulin. These animals were seemingly in good health for months, and there was no evidence to point to the fact that they would not continue that way for years. Yet depancreatized dogs fed on meat, lard, and sucrose and adequately treated with insulin died within one and a half years after removal of the pancreas. Pathologically such animals exhibited extremely fatty livers. Reasoning from the fact that depancreatized dogs, unlike human diabetics, lack not only the islets of Langerhans but also do not have any of the exocrine (non-insulin) portion of the pancreas, MacLeod and co-workers (1) added pancreatic enzymes to the food of such dogs. This did not prevent the appearance of the fatty livers. However, the addition of raw pancreas to the diet completely prevented the fatty infiltration and permitted the maintenance of diabetic dogs in a healthy state.

Hershey and Soskin (2) in the same laboratory found that the curative substance contained in raw pancreas was in the lecithin fraction. It was found later by Best *et al.* (3) that the complete phospholipid was not necessary. Choline, an integral portion of the lecithin molecule, was the agent which prevented fatty infiltration of the liver in the diabetic dogs. Not only could choline prevent lipid deposition in the liver, but it could also clear a fatty liver of its excessive lipid content. It was also demonstrated that fatty livers, produced in non-diabetic animals by high-fat diets, could be prevented or normalized by choline administration. The term "lipotropic" substance was then applied, at first to choline and later to materials possessing similar properties. Soon other work led to the realization that certain proteins had lipotropic activities despite the absence of choline.

The work in the laboratories of Best (4), Channon (5), du Vigneaud (6), and others (7) employing physiological, organic chemical, and enzyme chemical techniques led to the realization that the amino acid methionine was the lipotropically active substance in proteins. This amino acid possesses a methyl group which is labile and can be transferred to other substances. The body normally synthesizes choline by first forming ethanolamine, which then acquires methyl (CH_3) groups from methionine to become choline (Fig. 1). It is, therefore, evident that the lipotropic activity of proteins is due to the supply of labile methyl groups which will form choline in the body.

Of what clinical importance are these data? The work of Whipple (8), Bollman (9), and others (10) demonstrated that a liver containing little glycogen and much fat is less resistant to the action of noxious agents, such as chemical liver "poisons" and bacterial toxins. There is, also, a considerable body of clinical experience testifying to the beneficial effect of a high-carbohydrate-low-fat diet or of intravenous glucose on the course of infectious and of toxic hepatitis (11) (12) (13). A high glycogen content in the liver cell acts as a protective substance for the essential cell proteins and lessens necrosis. In recent years it has

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[2] The Department is in part supported by the Michael Reese Research Foundation.

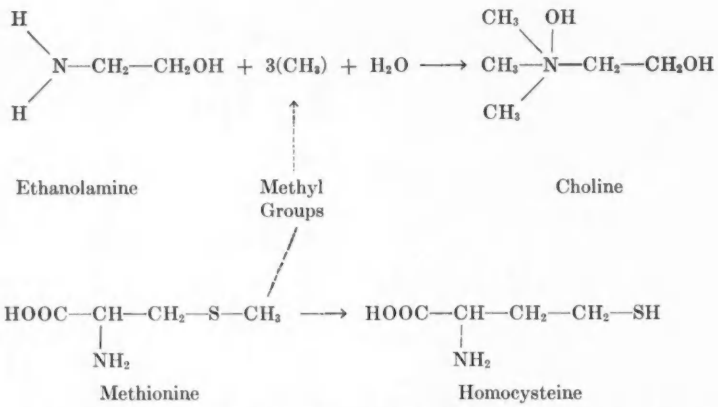

FIG. 1. *When methionine loses its methyl (CH_3) group and becomes homocysteine, the methyl group is transferred to ethanolamine to form choline. This explains the lipotropic activity of proteins containing methionine.*

also been amply demonstrated that a high-fat diet in the absence of sufficient lipotropic factors will cause more than merely fatty infiltration of the liver. A high fat content of the liver of long standing leads to cell degeneration and fibrotic changes. Complete cirrhosis of the liver has been produced experimentally in this way without any additional administration of "hepatotoxins" (14) (15) (16).

Summarizing the above evidence leads to the realization that, in the face of liver disease, the dietary management should stress carbohydrates and lipotropic factors in order to prevent fat accumulation and its consequences.

The role of proteins and of the vitamins in liver disease is based upon our constantly increasing knowledge of the mechanisms by which the chemical reactions of the living cell are driven. The breaking down and building up of our foodstuffs proceeds by means of short intermediary steps, each of which is catalyzed by an enzyme system specific for that step. Thus the breakdown of glucose to carbon dioxide and water is a chain of some twenty-five to thirty reactions which follow each other in coordinated fashion (17). The weakening or complete disappearance of one of these catalytic steps brings about an incomplete or complete inhibition of the overall metabolism of glucose. The enzyme systems which are the active agents of metabolism consist of specific proteins to which may be attached organic substances which form part of the enzyme systems. These are called co-enzymes. In many instances where we know their chemical structure, it has been shown that they are derived from ingested vitamins. Thus thiamine links up in the cell with phosphate to become diphosphothiamine, which is the specific and necessary co-enzyme for the metabolism of pyruvic acid (18). Nicotinic acid (niacin) gives rise in the body to two co-enzymes which operate in some ten to twelve chemical reactions (19). The same applies to riboflavin (20) and pyridoxine (21), and may apply (when our knowledge broadens) to all of the vitamins, or at least to the water-soluble group.

Considered from a chemical viewpoint, hepatitis and cirrhosis mean an intense breakdown of cell proteins, i.e., of the enzyme systems. Reversal of this breakdown or even inhibition of its progress, therefore, requires an increased supply of the building stones from which the enzyme systems are built up—amino acids and vitamins (Fig. 2). It has also been shown that fasting depletes the liver protein content very quickly and that only proteins of a high biological value restore this protein content to normal.

Thus the reason why the most effective diet in the therapy of liver disease is one containing a high proportion of biologically superior protein, a high level of carbohydrate, little fat, and the addition of vitamins and lipotropic substances like choline (23–25) becomes understandable.

In addition, it should be pointed out that effective slowing of tissue destruction can only be obtained by supplying the materials needed for synthesis in abundant amounts. Therefore, the diet should be high in total calories (3000–4000 per 24 hr. in the adult male).

With all good intentions and even with full understanding, a prescription of the diet outlined above is of no particular value to the patient if it is not eaten or absorbed. This is, of course, a truism. However, patients with liver disease, especially hepatitis, suffer from profound anorexia. It requires good cooking, attractive serving, and persuasion to treat such cases by dietary means.

There is a large body of evidence that the liver functions in part as a storehouse of certain of the vitamins, notably A, D, and K. Since these vitamins are fat-soluble, their efficient absorption de-

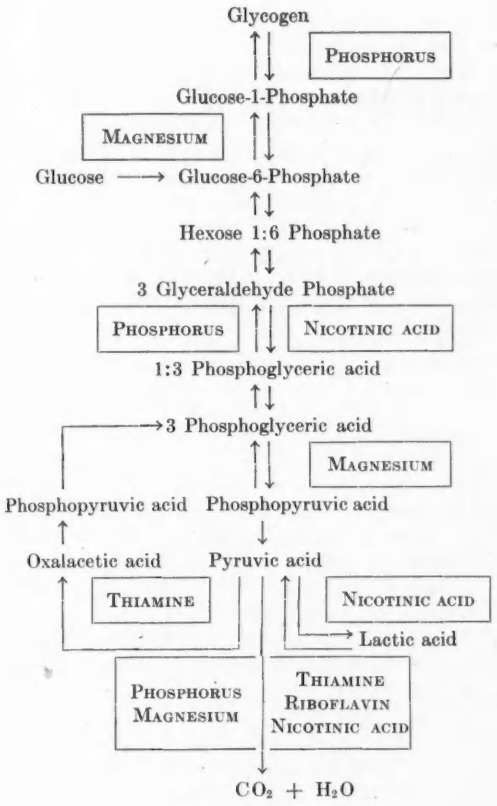

FIG. 2.

pends upon the normal intestinal supply of the bile salts (manufactured in the liver). Even if absorption is good, the damaged liver fails to keep these vitamins in storage for the use of the tissues. As a consequence of this kind of disturbance of function, it has been observed that symptoms and signs of vitamin A, D, and K deficiencies are common in chronic liver disease. Therefore, these factors must be supplied and, with interference in absorption, parenteral administration becomes necessary (25).

It is evident from the evidence cited that the present dietary therapy of liver disease is well founded. Data obtained on experimental animals and from clinical observations fit together to make a clear and coherent pattern.

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Comparison of Meat and Legumes in a Controlled Feeding Program[1]

I. Dietary Plan[1]

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THE relative value of meat and of legumes in the feeding of growing children was studied for a fourteen-month period in two orphanages in central Pennsylvania. Dietitians on the staff of the Ellen H. Richards Institute resided in the respective institutions; planned the menus in conformity with a master plan; weighed all raw foods and supervised the food preparation and the serving of measured amounts of the foods to each child; and kept daily dietary records of each child's consumption.

At the beginning of the study, after eight months on the experimental regimens, and after a subsequent six-month period, the children were taken to a nutrition laboratory where the following observations and tests were made:

(1) Examination by a pediatrician
(2) Dental examinations, including a clinical charting, complete dental X-rays, and bacteriological and chemical tests on saliva
(3) Anthropometric examinations of body and head
(4) X-rays of the hand, foot, elbow, and knee, to evaluate:
    (a) Skeletal maturity
    (b) Degree of skeletal mineralization by a microphotometric technique
(5) Examination of the following by means of the biomicroscope:
    (a) The eye for xerosis of the conjunctiva and for vascularization of the cornea
    (b) The tongue
    (c) The gingiva
    (d) The skin
(6) Histological examination of epithelial tissues from the oral cavity
(7) Blood tests for the following:
    (a) Hemoglobin
    (b) Red cell count
    (c) Hematocrit, or packed cell volume
    (d) Leucocyte count
    (e) Differential cell count
    (f) Vitamin A
    (g) Carotene
    (h) Ascorbic acid
    (i) Total serum protein
    (j) Serum albumin
    (k) Phosphatase
(8) Urinary tests for the following:
    (a) Thiamine
    (b) Riboflavin
(9) Functional observations and tests for the following:
    (a) Heart action (medical examination supported by an electrocardiogram)
    (b) Reflexes
    (c) Fatigue (standardized push-up test)
    (d) Dark adaptation

The dietaries were planned so that the children under ten years of age in the first orphanage, designated as Institution I, would receive meat (including poultry and fish) twice weekly, to the extent of 75 gm. of meat and liver (in the ratio of nine to one) and 75 gm. of poultry or fish. Children ten years of age and over received 100 gm. per week of the two categories.

The menus for the second orphanage included meat, poultry, or fish ten times weekly, with the following distribution: meat and liver (in the ratio of nine to one) to the extent of 675 gm. for the younger and 900 gm. for the older age group; poultry or fish to the extent of 75 and 100 gm., for the two respective groups of children.

[1] Received for publication April 8, 1946. This study is one of a series of investigations on child feeding carried on cooperatively with the Department of Health, Commonwealth of Pennsylvania. It was assisted by a grant-in-aid from the National Live Stock and Meat Board.

The dietaries of Institution I provided main dishes of legumes supplemented by macaroni, peanuts, and peanut butter for the eight meals during which Institution II received meat. Thus the plan for Institution I included meat twice and legumes or related foods eight times, whereas the Institution II plan provided meat ten times weekly. By supplying more green leafy vegetables in the dietary of Institution I, it was possible to plan menus for both institutions in which the caloric value of each dietary, as well as the nutrient content, met or exceeded in all respects the recommendations of the Food and Nutrition Board of the National Research Council (1) on a calculation basis. They also matched each other closely.

This is the first in a series of three reports which describe the dietaries of the two institutions, the results of the physical observations and tests, and the relationship of findings (which show different results in the case of the children of the two institutions) to other published investigations. Part I of the report describes the dietaries in the two orphanages; Part II will present the results of the medical, dental, and laboratory tests on the children; and Part III will discuss the findings with particular reference to the published literature on the subject.

EXPERIMENTAL SUBJECTS

Two groups of experimental subjects—orphanage children of both sexes—were used in the study. The first was a church home in which the boys and girls lived in separate buildings and ate in separate dining rooms, but in which one dietitian planned the same menus for both groups. The meals were prepared in as nearly an identical manner as possible under the same supervision. This is called Institution I.

The second institution was a county home for children in which boys and girls slept in different wings of the same building, but ate in a common dining room. This is called Institution II. Both groups of children were considerably undernourished when the study began.

Initially there were seventy-four children in Institution I and seventy in Institution II. By virtue of adoptions and reclaiming of children by their families, only sixty-one of the original children in Institution I and forty-one in Institution II remained in the study for the fourteen-month period covered by this report. The sex-age distribution of the children who completed the study is shown in Table 1.

TABLE 1

Sex and age distribution of children in two institutions

SEX AND AGE GROUPS	INSTITUTION I	INSTITUTION II
5 to 6 years old		
Boys	2	3
Girls	0	3
7 to 9 years old		
Boys	16	9
Girls	15	4
10 to 12 years old		
Boys	13	13
Girls	13	5
13 to 15 years old		
Boys	0	0
Girls	2	4

INITIAL DIETARIES IN THE TWO ORPHANAGES

Before the dietary plan was inaugurated, the dietitians assigned to the two orphanages ascertained the foods which were being served within each orphanage when the investigation began by weighing all raw foods prepared for a period of two weeks and measuring the portion served to each child at each meal. Corrections were made for foods not eaten by any one child. Back records within the institutions were studied, and it was concluded that the two-week records were representative of the dietaries characteristic of the two orphanages.

The charts give the weighted mean of the recommended allowance for calories and the nutrients adapted from the tables of the Food and Nutrition Board of the National Research Council, together with the calculated average initial intake, and the average intake throughout the experimental period for the two specified age groups within each institution. In making the dietary calculations, the tables and special records obtained from the National Research Council Food and Nutrition Board were used.

The charts also show the distribution of calories and of vitamin A as to animal and vegetable sources. Sources of protein, iron, thiamine, riboflavin, and niacin are also shown.

In calculating the weighted mean of the recommended allowance for the two age groups, the recommendations for children on a sex-age basis were used in proportion to the number in each age group (see Table 1). The values for calculated average intake during the experimental period were obtained by averaging the intake of each child (difference between food served on the plate and side dishes and food discarded) throughout the period.

Table 2 gives the numerical data for the weighted mean of the recommended allowance for energy and the respective calculated nutrients, and the initial average intakes of the children, the latter broken down into the same categories as in the charts.

In the charts and Table 2, the recommended allowances of the Food and Nutrition Board of the National Research Council (1) were used for energy and for all nutrients except phosphorus. The recommendations of Stiebeling and Phipard (2) were used for phosphorus, in the absence of a recommendation by the aforementioned agency. Both the recommendation of the Food and Nutrition Board of the

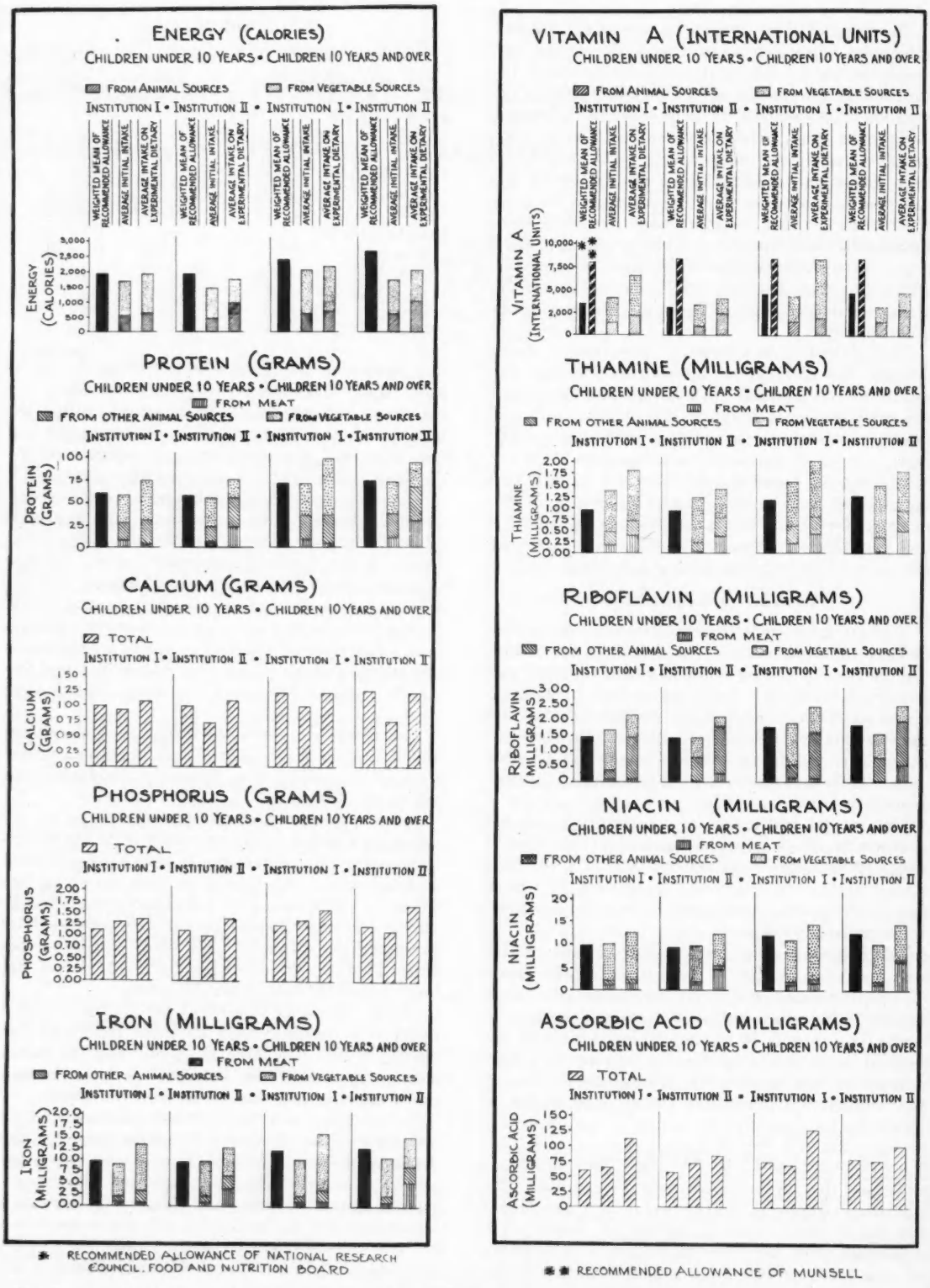
ENERGY (CALORIES)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
FROM ANIMAL SOURCES
FROM VEGETABLE SOURCES
INSTITUTION I • INSTITUTION II • INSTITUTION I • INSTITUTION II
WEIGHTED MEAN OF RECOMMENDED ALLOWANCE
AVERAGE INITIAL INTAKE
AVERAGE INTAKE ON EXPERIMENTAL DIETARY
ENERGY (CALORIES)
PROTEIN (GRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
FROM MEAT
FROM OTHER ANIMAL SOURCES
FROM VEGETABLE SOURCES
PROTEIN (GRAMS)
CALCIUM (GRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
TOTAL
CALCIUM (GRAMS)
PHOSPHORUS (GRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
TOTAL
PHOSPHORUS (GRAMS)
IRON (MILLIGRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
FROM MEAT
FROM OTHER ANIMAL SOURCES
FROM VEGETABLE SOURCES
IRON (MILLIGRAMS)
VITAMIN A (INTERNATIONAL UNITS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
VITAMIN A (INTERNATIONAL UNITS)
THIAMINE (MILLIGRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
THIAMINE (MILLIGRAMS)
RIBOFLAVIN (MILLIGRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
RIBOFLAVIN (MILLIGRAMS)
NIACIN (MILLIGRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
NIACIN (MILLIGRAMS)
ASCORBIC ACID (MILLIGRAMS)
CHILDREN UNDER 10 YEARS • CHILDREN 10 YEARS AND OVER
ASCORBIC ACID (MILLIGRAMS)
* RECOMMENDED ALLOWANCE OF NATIONAL RESEARCH COUNCIL, FOOD AND NUTRITION BOARD
** RECOMMENDED ALLOWANCE OF MUNSELL

FIG. 1. *Initial and experimental dietaries in two institutions as compared with weighted mean of recommended allowance.*

TABLE 2

Initial dietaries of the two children's institutions, as compared to the weighted means of specified recommended allowances

ENERGY SOURCE AND NUTRIENTS	INSTITUTION I				INSTITUTION II			
	Dietary of children under 10 years of age		Dietary of children 10 years of age and over		Dietary of children under 10 years of age		Dietary of children 10 years of age and over	
	Weighted mean of recommended allowance*	Calculated average initial intake	Weighted mean of recommended allowance*	Calculated average initial intake	Weighted mean of recommended allowance*	Calculated average initial intake	Weighted mean of recommended allowance*	Calculated average initial intake
Calories								
From animal sources		526		674		460		600
From vegetable sources		1162		1434		1036		1130
Total	1976	1688	2322	2108	1874	1496	2614	1730
Protein (gm.)								
From meat		7.6		9.2		6.9		10.2
From other animal sources		20.3		25.7		16.2		28.2
Total from animal sources		27.9		34.9		23.1		38.4
From vegetable sources		30.4		35.6		32.2		33.6
Total	60	58.3	71	70.5	57	55.3	74	72.0
Calcium (gm.)	1.00	0.93	1.21	0.99	1.00	0.73	1.25	0.75
Phosphorus (gm.)	1.11†	1.28	1.19†	1.33	1.10†	0.98	1.21†	1.11
Iron (mg.)								
From meat		0.93		1.05		0.83		0.88
From other animal sources		1.20		1.36		1.28		1.50
Total from animal sources		2.13		2.41		2.11		2.38
From vegetable sources		7.14		7.99		7.56		8.34
Total	9.9	9.27	12.2	10.40	9.4	9.67	12.9	10.72
Vitamin A (I.U.)								
From animal sources		1082		1168		976		1573
From vegetable sources		2657		3134		1894		1627
Total	3440††	3739	4536††	4302	3184††	2870	4659††	3200
Thiamine (mg.)								
From meat		0.160		0.200		0.030		0.041
From other animal sources		0.315		0.407		0.198		0.297
Total from animal sources		0.475		0.607		0.228		0.338
From vegetable sources		0.903		0.965		1.009		1.144
Total	0.988	1.378	1.207	1.572	0.936	1.237	1.259	1.482
Riboflavin (mg.)								
From meat		0.086		0.137		0.016		0.017
From other animal sources		0.308		0.408		0.775		0.784
Total from animal sources		0.394		0.540		0.791		0.801
From vegetable sources		1.289		1.394		0.637		0.771
Total	1.482	1.683	1.815	1.934	1.416	1.428	1.864	1.572
Niacin (mg.)								
From meat		1.11		1.43		1.43		1.54
From other animal sources		0.63		0.76		0.57		0.68
Total from animal sources		1.74		2.19		2.00		2.22
From vegetable sources		8.45		8.91		7.80		8.02
Total	9.88	10.19	12.07	11.10	9.39	9.80	12.60	10.24
Ascorbic acid (mg.)	59	65	75	70	57	73	80	78
Vitamin D (I.U.)	400	38	400	42	400	43	400	48

* The weighted mean of the recommended allowance for energy and for each of the calculated nutrients, respectively, was obtained by recording the recommendation for each sex and age group of children, as given by the Food and Nutrition Board, National Research Council, multiplying each value by the number of children in the group, adding the products, and dividing by the total number of children.

† Recommended allowance of Stiebeling and Phipard (2).

†† Recommended allowances of Munsell (3)--8000–10,000 I.U.

National Research Council and of Munsell (3) are given for vitamin A, because this nutrient came in considerable measure from pro-vitamin A, particularly in Institution I.

The figure and table show that both institutions initially were lower than the recommended allowances for energy, with Institution II lower than Institution I in this respect. Children in both institutions were consuming amounts of protein which corresponded closely to the recommendations.

Calcium consumption was lower than the recommendation, with the older age group poorer in this respect than the younger in both institutions. Institution I exceeded the phosphorus recommendation slightly, whereas Institution II did not meet the recommended allowance in this respect. The intake of iron by the younger age group approximately matched the recommended allowance, while that of the older group fell somewhat short in both institutions.

Vitamin A intake in Institution I approximately met the National Research Council recommendation, but fell far short of Munsell's recommended allowances. Institution II failed to meet either of these two recommended intakes.

Both institutions provided the thiamine allowances. Institution I exceeded slightly the riboflavin recommendation, while Institution II met this only for the younger age group. The younger age groups in both institutions met the niacin recommendations, but the older age groups failed to do so.

Both age groups in both institutions approached the ascorbic acid intake on a calculation basis, although a considerable portion of this nutrient was supplied in cooked foods. Cooking of fruits and vegetables in both institutions was carried on for excessive periods of time. Laboratory cooking tests simulating the methods of cooking stews and vegetables in both orphanages showed that ascorbic acid losses were extensive.

At the time when the initial diet records were made (late summer) no vitamin D supplement was being given to the children in either orphanage. The vitamin D intake was extremely low in both groups, although this was not regarded as serious at this time of year since the children worked in the gardens and farms and played out of doors extensively. Small amounts of cod-liver oil were given in winter, as will be described.

DIETARY PLAN

The master plan as designed for the dietaries within the two orphanages is shown in Table 3. This table gives the weekly planned intake for children under ten years of age and for children ten years and over in the two institutions, and the frequency with which the various food items were intended to be served.

According to the plan of the study, the dietitians assigned to the two orphanages conferred weekly concerning their menus. An attempt was made not only to keep the dietaries aligned with the master plan as closely as possible, but also to select foods within the different categories which were similar in type for the two institutions. A list of raw foods for a certain week was given well in advance to the administrative officer within the institution responsible for procurement.

In serving, the food was measured onto plates and into accessory dishes, so that all children within the two specified age groups in one orphanage received the same quantities of the respective foods at any one meal. Sufficient supervision was exercised to prevent trading of foods between children. Uneaten foods were measured for each child. These grew less and less as the experiment proceeded. If a child desired second helpings, he was given small portions of all foods on the meal's menu, in equal proportion to their provision in the meal proper. The call for second helpings was infrequent except among the older boys.

The following factors prevented the master plan from being followed in the absolute sense:

(a) The children had been considerably undernourished before the investigation began, and they did not consume the quantities of foods outlined in the menus early in the study, although their quantity of consumption increased with time. After approximately three months, however, there were few uneaten foods remaining on the plates.

(b) The person serving as purchasing agent on the staff of each respective institution did not always provide the raw foods specified in the menus.

The failure to provide the foods listed in the menu was due partly to food shortages on the market and partly due to limited funds for foods. Both institutions operated small farms, and the habit of relying chiefly on their own farm produce was deep-seated. It was difficult to break the habit of serving whatever was at hand rather than procuring what was needed for a certain dietary pattern. Improvement in this respect was considerable as the study progressed. Moreover, the investigators helped to supply some needed foods.

CONFORMITY OF THE DIETARIES TO THE RECOMMENDED ALLOWANCES AND TO THE MASTER PLAN

Table 4 gives the calculated daily average values of the experimental dietaries for the two specified age groups within the two institutions. Table 5 gives a comparison of the calculated values for the master plan and for the average intakes in the respective orphanages. It should be noted that the calculated provisions of the master plan exceeded the recommended allowances in all respects. This was done on the thesis that the children, initially quite undernourished, should have an exceptionally good supply of energy and of all nutrients, so that

TABLE 3

Master plan for the dietaries in the two institutions

FOOD GROUPS	INSTITUTION I				INSTITUTION II			
	Dietary of children under 10 years of age		Dietary of children 10 years of age and over		Dietary of children under 10 years of age		Dietary of children 10 years of age and over	
	Intended weekly intake	Frequency	Intended weekly intake	Frequency	Intended weekly intake	Frequency	Intended weekly intake	Frequency
	gm.		*gm.*		*gm.*		*gm.*	
Milk	4725	675 gm. daily	5250	750 gm. daily	4725	675 gm. daily	5250	750 gm. daily
Meat and liver	75	once weekly ($\frac{1}{10}$ as liver)	100	once weekly ($\frac{1}{10}$ as liver)	675	9 times weekly ($\frac{1}{10}$ as liver)	900	9 times weekly ($\frac{1}{10}$ as liver)
Poultry and fish	75	once weekly	100	once weekly	75	once weekly	100	once weekly
Eggs	150	3 times weekly	200	4 times weekly	150	3 times weekly	200	4 times weekly
Legumes, etc.	466	legumes, 6 times weekly macaroni, 2 times weekly peanuts and peanut butter, 7 tbsp. approximately 2 times weekly	500	legumes, 6 times weekly macaroni, 2 times weekly peanuts and peanut butter, 7 tbsp. approximately 2 times weekly				
Potatoes	700	7 times weekly	1050	7 times weekly	700	7 times weekly	1050	7 times weekly
Citrus fruits and tomatoes	700	7 times weekly	1050	7 times weekly	700	7 times weekly	1050	7 times weekly
Greens	240	4 times weekly	300	4 times weekly	240	4 times weekly	300	4 times weekly
Green or yellow vegetables	300	5 times weekly	375	5 times weekly	300	5 times weekly	375	5 times weekly
Other fruits	700	7 times weekly	1050	7 times weekly	700	7 times weekly	1050	7 times weekly
Other vegetables	700	7 times weekly	1050	7 times weekly	700	7 times weekly	1050	7 times weekly
Butter or margarine	210	3 pats daily	315	4½ pats daily	210	3 pats daily	315	4½ pats daily
Lard, other fats, and oils	175	2½ tbsp. daily	245	3½ tbsp. daily	175	2½ tbsp. daily	245	3½ tbsp. daily
Bread	756	4 slices daily	1134	6 slices daily	756	4 slices daily	1134	6 slices daily
Cereal	105	7 times weekly	140	7 times weekly	105	7 times weekly	140	7 times weekly
Cookies	210	1 oz. daily	210	1 oz. daily	210	1 oz. daily	210	1 oz. daily
Sugar	175	2 tbsp. daily	175	2 tbsp. daily	175	2 tbsp. daily	175	2 tbsp. daily

nothing would limit their opportunity for making progress on the two types of menus. Likewise, nothing would then prevent the drawing of conclusions concerning the major subject of the study, namely, the comparative value of two levels of meat and of legumes and related vegetable products in a child feeding program. Moreover, the children were growing older as the study proceeded.

The master plan was calculated from average values of foods within each group most frequently used in the region where the study was used.

In *energy*, the children in the younger age group in both institutions were initially considerably below their recommended caloric intake, and a few months were required before they reached this level. Then they advanced in caloric intake to the extent that the overall average during the fourteen months approached the mean of the recommended allowance.

TABLE 4

Calculated daily average intakes of the experimental institutional dietaries

ENERGY SOURCE AND NUTRIENTS	INSTITUTION I		INSTITUTION II	
	Dietary of children under 10 years of age	Dietary of children 10 years of age and over	Dietary of children under 10 years of age	Dietary of children 10 years of age and over
Calories				
From animal sources	634	704	974	1030
From vegetable sources	1297	1478	783	1012
Total	1931	2182	1757	2042
Protein (gm.)				
From meat	3.8	4.8	23.5	31.9
From other animal sources	27.2	30.8	32.0	35.8
Total from animal sources	31.0	35.6	55.5	67.7
From vegetable sources	43.2	62.2	19.4	26.0
Total	74.2	97.8	74.9	93.7
Calcium (gm.)	1.07	1.19	1.10	1.23
Phosphorus (gm.)	1.35	1.54	1.36	1.67
Iron (mg.)				
From meat	0.85	1.07	4.03	5.45
From other animal sources	2.45	2.69	2:85	3.19
Total from animal sources	3.30	3.76	6.88	8.64
From vegetable sources	10.48	12.31	5.91	6.73
Total	13.78	16.07	12.79	15.37
Vitamin A (I.U.)				
From animal sources	1845	1986	2409	2903
From vegetable sources	4968	6432	1672	1811
Total	6813	8418	4081	4714
Thiamine (mg.)				
From meat	0.371	0.429	0.362	0.495
From other animal sources	0.344	0.376	0.400	0.443
Total from animal sources	0.715	0.805	0.762	0.938
From vegetable sources	1.103	1.273	0.654	0.860
Total	1.818	2.078	1.416	1.798
Riboflavin (mg.)				
From meat	0.107	0.137	0.396	0.544
From other animal sources	1.333	1.457	1.410	1.449
Total from animal sources	1.440	1.594	1.806	1.993
From vegetable sources	0.731	0.867	0.344	0.524
Total	2.171	2.461	2.150	2.517
Niacin (mg.)				
From meat	1.48	1.68	4.89	6.26
From other animal sources	0.60	0.66	0.72	0.81
Total from animal sources	2.08	2.34	5.61	7.07
From vegetable sources	10.69	12.09	6.88	7.52
Total	12.77	14.43	12.49	14.59
Ascorbic acid (mg.)	112	128	86	100
Vitamin D (I.U.)	40*	45**	40**	51**

* Supplements providing 600 I.U. of vitamin D daily were given to each child for four months.

** Supplements providing 400 I.U. of vitamin D daily were given to each child for four months.

TABLE 5

Comparison of calculations of the master plan with those of the actual daily average intakes for children in the two institutions

ENERGY SOURCE AND NUTRIENTS	INSTITUTION I				INSTITUTION II			
	Dietary of children under 10 years of age		Dietary of children 10 years of age and over		Dietary of children under 10 years of age		Dietary of children 10 years of age and over	
	Master plan	Average actual intake	Master plan	Average actual intake	Master plan	Average actual intake	Master plan	Average actual intake
Calories	2,180	1,931	2,796	2,182	2,108	1,757	2,750	2,042
Protein (gm.)	68.2	74.2	82.6	97.8	67.0	74.9	83.0	93.7
Calcium (gm.)	1.15	1.07	1.34	1.19	1.10	1.10	1.29	1.23
Phosphorus (gm.)	1.41	1.35	1.68	1.54	1.32	1.36	1.65	1.67
Iron (mg.)	14.30	13.78	17.85	16.07	14.10	12.79	18.70	15.37
Vitamin A (I.U.)	10,157	6,813	11,793	8,418	10,080	4,081	12,267	4,714
Thiamine (mg.)	1.734	1.818	2.213	2.078	1.762	1.416	2.335	1.798
Riboflavin (mg.)	2.829	2.171	3.321	2.461	2.830	2.150	3.390	2.517
Niacin (mg.)	12.97	12.77	16.00	14.43	11.03	12.49	14.50	14.59
Ascorbic acid (mg.)	116	112	157	128	100	86	158	100

The two older age groups, however, originally consuming far less than the recommended allowance, especially in Institution II, made considerable advances in this respect as the study proceeded, but did not average throughout the fourteen-month period as much as the recommended allowances, or the master plan. An average for the overall caloric intake throughout the study indicated that the older children in Institution I met 94 per cent of the recommended allowances for children of the ages which pertained when the study began; and in Institution II, the older children met but 78 per cent throughout the entire period. When the study began this group was reaching but 66 per cent of the caloric recommendations, but they increased their total food consumption as the study progressed.

In both institutions, the children of both age groups exceeded the recommended allowances of calculated *protein* intake, and even surpassed the master plan in this respect. However, the levels of protein intake were similar. Thus, the younger age groups averaged, respectively, 74.2 and 74.9 gm. daily, and the older age groups 97.8 and 93.7 gm. The reason that the protein intakes could be maintained at levels which were so closely similar on a calculation basis was the fact that both orphanages produced their own milk and eggs, and hence the dietitians never experienced any shortage of these foods; and meat and legumes—the chief foods with which the study concerned itself—were supplied by the investigators if not by the institutions.

The two age groups in both institutions were closely similar to each other in total protein consumption, with the respective distributions between meat, other animal, and vegetable sources reflecting the two levels of meat and legumes, as is shown in Table 6.

Calcium intake, on the average, approximately met or exceeded the recommended allowances, and met

TABLE 6

Sources and amounts of protein consumed by children on experimental dietaries in two institutions

SOURCES OF PROTEIN	INSTITUTION I		INSTITUTION II	
	Average protein consumption of children under 10 years of age	Average protein consumption of children 10 years of age and over	Average protein consumption of children under 10 years of age	Average protein consumption of children 10 years of age and over
	gm.	*gm.*	*gm.*	*gm.*
Meat (including poultry and fish)	3.8	4.8	23.5	31.9
Other animal sources	27.2	30.8	32.0	35.8
Total from animal sources	31.0	35.6	55.5	67.7
Vegetable sources	43.2	62.2	19.4	26.0
Total from all sources	74.2	97.8	74.9	93.7

or approached the calcium as calculated in the master plan. This was true for both age groups in both orphanages.

For all groups, average *phosphorus* consumption exceeded the recommended allowances, and met or approached the phosphorus calculations in the master plan. Institution II consumed slightly more phosphorus on the average than did Institution I.

Iron consumption on the average exceeded the recommendations for both age groups in each of the institutions, and approached but did not reach the calculated iron content of the dietaries which constituted the master plan.

In the two age groups of both institutions, the average calculated *vitamin A* intake exceeded the recommendations of the Food and Nutrition Board of the National Research Council, but failed to reach the Munsell recommendations or the calculated vitamin A provision of the master plan.

In Institution I, the vitamin A intake far exceeded that in Institution II, on a calculation basis. In Institution I, about three quarters of the vitamin A was derived from vegetable sources. In Institution II, on the other hand, in which the younger children consumed about two thirds and the older children one half as much of the calculated vitamin A as that of the corresponding age group in Institution I, almost twice as much of the vitamin came from animal as from vegetable sources.

In *thiamine*, *riboflavin*, *niacin*, and *ascorbic acid*, the intake of both age groups of children in both institutions exceeded the recommended allowances and approached the calculated provision of the master plan. Institution I, however, was slightly higher in thiamine and ascorbic acid intake.

The children of Institution II, particularly the older age group, fell below those of Institution I in caloric intake, chiefly through a failure to consume as much potatoes, bread, and cereals as did the children in the first institution. Their vitamin A intake was lower chiefly because they consumed less green and yellow vegetables than called for in the master plan.

SUMMARY

Two groups of orphanage children in central Pennsylvania were carried through a fourteen-month study. In one institution, designated as Institution II, meat was served ten times weekly (including one serving of poultry or fish). Liver was consumed to the extent of one tenth by weight of the meat (not including the poultry or fish). In the other institution, designated as Institution I, the children received weekly one similar serving of poultry or fish and one serving of meat and liver, of which liver consisted of one tenth of the weight of the total. Legumes and other vegetable products were included in the dietary of this institution to such an extent that protein and other nutrients were equivalent to those of Institution II on a calculated basis. All other foods were included in a master plan in similar quantities in the two institutions, so that the dietaries of both would meet or exceed certain recommended allowances as set forth in the text. Both groups of children were considerably undernourished when the study was begun.

Practical limitations as outlined prevented the master plans from being carried out in the absolute sense. However, the recommended allowances were met or exceeded in all respects except for caloric intake in Institution II and vitamin A according to the Munsell recommendations in both institutions. The average intake, according to calculations, was similar in both institutions except that Institution II was markedly lower in caloric intake and in intake of vitamin A. Institution I was slightly higher in average intake of thiamine and of ascorbic acid, whereas Institution II was slightly higher in phosphorus consumption. A remarkable similarity on a calculation basis was maintained for the levels of protein, iron, riboflavin, and niacin.

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Growth on Dehydrated Protein Products

With the rapid development in the dehydration of meat, milk, and eggs which occurred during the war, the question has naturally arisen as to the nutritive value of these protein foods. To determine the growth-promoting value and digestibility of dehydrated meats in comparison with dried eggs and dried milk, a study was undertaken by the Bureau of Animal Industry, U. S. Department of Agriculture.

Young rats were fed sixteen lots of dehydrated pork, eighteen lots of beef, and four of mutton. They were also tried out on one lot each of dried eggs and dried skim milk. Results of the tests recently reported by Ralph Hoagland, senior biochemist in charge of the study, showed that the protein of dehydrated pork, beef, and mutton averaged about the same in growth-promoting qualities and was similar to that of dried skim milk. However, dried eggs proved superior to meat and milk, although the meat and eggs were more quickly digested than the dried milk.

Although the rats averaged about the same growth on the three types of meat, there was considerable difference in the growth-promoting qualities between the lots of pork and of beef. The different lots of mutton, however, produced approximately the same rate of growth, with little difference due to the lot used.

In the beef studies the best growth was made on a good grade of round steak, which had not been precooked before drying. Poorest growth was shown on a diet of canned corned beef that was dried for testing. This product was also the longest to digest.

The findings indicate that if dehydrated pork and beef are to have high nutritive value, processing methods which conserve nutrients must be used.

Hemoglobin Values of College Women[1]

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HIGHER hemoglobin values are generally associated with improved nutritional status within any age group. According to a study made by Mack *et al.* (1), the test for hemoglobin has yielded results of sufficient interest to commend it for consideration by those seeking to appraise the nutritional status of human beings, whether the number of tests used is extensive or limited.

Investigators have found great variation in the averages of hemoglobin values in human beings. As a result there are no generally accepted standards. Nevertheless, instances of poor nutritional status with respect to hemoglobin value may be indicated on an individual case basis by the use of clinical tests.

Attempts have been made to determine the effects of sex, age, body size, and menstruation upon the hemoglobin and erythrocyte values. Mack *et al.* (1) compiled tables of data based on the hemoglobin concentration in the blood of male and female subjects. These averages are based on studies with as few as ten cases or as many as 325 cases. The values ranged from 14.07 to 17.0 gm. per 100 cc. of blood for males, whereas, the values for females ranged from 12.80 to 15.28 gm. per 100 cc. of blood. It is noteworthy that the averages shown for females were uniformly lower than those listed for males.

A study of 684 college men and 604 college women made by Sheets and Barrentine (2) revealed that 81 per cent of the values for the men came within the range of 13.00 to 16.00 gm.; 76.40 per cent of the women fell between 11.50 and 14.00 gm. per 100 cc. Leichsenring and co-workers (3) studied the blood of 258 normal high school girls ranging in age from twelve to nineteen years. They found the hemoglobin mean value to be 12.21 gm. and the red cell mean to be 4.15 million per cubic millimeter.

Sheets and Barrentine (2) presented data from work done to determine whether a relationship existed between the level of the hemoglobin and the weight of the subjects. It was concluded from their results that underweight in both men and women students could not be related to low hemoglobin values.

Since women have lower average hemoglobin levels than men, the question is raised as to what extent the blood-iron losses from the body through menstruation may contribute to this lower average. Barer and Fowler (4) determined the iron content of the menstrual loss of 100 women. The average loss of blood was 50.55 cc., which was equivalent to the loss of 17.45 mg. of iron. The menstrual loss ranged from 6.66 to 178.69 cc. of blood, which was equivalent to a loss of from 2.28 to 78.96 mg. of iron. They found no correlation between the blood loss and the hemoglobin level.

From data collected on 258 high school girls ranging in age from twelve to nineteen years, Leichsenring *et al.* (3) observed that the lowest mean values for hemoglobin were obtained for those groups of girls in whom menstruation had been established for two and three years, and that higher values were obtained for the groups in whom it had been established for four, five, and six years. It was thought that of the two factors, rate of growth and menstruation, rate of growth may exert a greater influence on hemoglobin and red cell counts.

The available literature reveals conflicting data as to hemoglobin values and erythrocyte count of the blood. Further studies may contribute to these data and may lead to the establishment of reliable standards for erythrocyte counts and hemoglobin values. With this in mind this study was made to determine the normal range of blood hemoglobin and erythrocyte count for a group of thirty college women.

EXPERIMENTAL PROCEDURE

The thirty women who served as experimental subjects for the study were selected from those living in the dormitories at the Virginia Polytechnic In-

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stitute during the winter and spring quarters of 1945. Their ages ranged from seventeen to twenty-six years with a mean of nineteen years.

The blood was collected in a paraffin cup from a freely flowing cut obtained by a puncture of the finger tip with a spring lancet. The first drop of blood was discarded. These collections were made at various times of the day, but always at least 1 hr. after eating. Some samples were obtained in the morning and some in the afternoon.

The blood samples were taken for approximately 50 per cent of the subjects during the latter stage of the menstrual cycle, beginning with the twentieth day after onset of menstruation. The time of the greater part of the remaining samples fell in the period from the tenth to the twentieth days. Thus, all samples were taken after the first stage of the menstrual cycle.

Hemoglobin was determined by using the acid hematin method, after calibration with the Wong method (5). Immediately after the collection of the blood, two 0.02-cc. samples of the blood were measured by using a pipette calibrated to contain exactly that amount. Duplicate readings were made in a Klett-Summerson photoelectric colorimeter, and the average of the two readings was recorded for each sample.

Erythrocyte counts were made using a Spencer (Bright-line) Haemacytometer. The number of erythrocytes per cubic millimeter of blood was determined. Hayem's solution was used for dilution in taking the count. The average of two erythrocyte counts was recorded for each sample.

RESULTS AND DISCUSSION

Mean Range and Relation of Hemoglobin Values and Erythrocyte Counts

The range of blood hemoglobin values was from 12.01 to 15.52 gm. per 100 cc. of blood, with a mean value of 14.20 ± 0.79 gm. per 100 cc. The range of erythrocyte count was from 3.82 to 5.36 million per cubic millimeter of blood, with a mean count of 4.69 ± 0.42 million cells.

A comparison of the average hemoglobin concentration obtained in this study with the results of other investigators who have studied healthy young women of approximately the same age is shown in Table 1. It will be noted that the average hemoglobin value found in this study was higher than averages reported by the majority of investigators. The mean value and range of the blood hemoglobin for the subjects of this study were close to those given by Bethell (6), who examined the blood of fifty women between the ages of eighteen and twenty-two years; by Wintrobe (7), who reported for 101 women with an age range from eighteen to thirty years; and by Osgood (8), who used 152 women of the ages from fourteen to thirty years.

The results of the erythrocyte counts indicated a mean value of 4.69 ± 0.42 million cells, with a range from 3.82 to 5.36 million per cubic millimeter of blood. These values are comparable to those found for normal women of this age group as may be noted in Table 2.

Sheets and Barrentine (2) reported for 604 college women a mean erythrocyte count of 4.66, with a range from 3.74 to 5.46 million cells per cubic millimeter. These values are close to those obtained in the current study, as is the mean value given by Bethell (6). The range values found by Wintrobe (7), Osgood (8), and Bethell (6) are less than those ported in this study.

The correlation coefficient between hemoglobin and erythrocyte values was not significant. This indicates a probable variation in the color index. The coefficient of correlation between ages and hemoglobin values in the group studied was also non-significant.

TABLE 1

Comparison of results with other investigations of hemoglobin values of females

INVESTIGATOR	NUMBER OF SUBJECTS	AGE RANGE	HEMOGLOBIN VALUES	
			Range	Mean
		years	*gm./100 cc.*	*gm /100 cc.*
Mack *et al.* (1)	22	17–19		13.57
Ibid. (1)	139	20–39		12.50
Sheets and Barrentine (2)	604	16–33	8.8 –15.7	12.4
Bethell (6)	50	18–22	12.4 –15.4	13.8
Leichsenring *et al.* (3)	258	12–19		12.21
Wintrobe (7)	101	18–30	12.0 –16.0	14.10
Everett (11)	84	18–32		13.16
Haden (12)	30	20–40		13.37
Osgood and Haskins (13)	100	18–30		13.70
Meyers and Eddy (14)	48	20–30		13.00
Wintrobe (9)	50	17–30		13.76
Osgood (8)	152	14–30	11.5 –16.0	13.8
Andresen and Mugrage (15)	40	20–45	12.7 –15.7	14.45
This study	30	17–26	12.01–15.52	14.21

TABLE 2

Comparison of erythrocyte counts for women with values obtained by other investigators

INVESTIGATOR	NUMBER OF SUBJECTS	AGE RANGE	ERYTHROCYTE VALUES	
			Range	Mean
		years	*millions/cu. mm.*	*millions/ cu. mm.*
Sheets and Barrentine (2)	604	16–33	3.74–5.46	4.66
Wintrobe (9)	101	18–30	4.50–5.70	4.82
Osgood (8)	152	14–30	4.20–5.10	4.80
Bethell (6)	50	18–22	4.05–5.28	4.66
This study	30	17–26	3.82–5.36	4.69

Hemoglobin in Relation to Weight

Weight, in relation to sex, age, and height, has long been held to be one indication of nutritional status. The question arises as to whether lower hemoglobin values are associated with underweight. The percentage of underweight or overweight of each subject was calculated from the tables published by the Life Extension Institute (10). The relationship between hemoglobin values and weight is shown in Table 3. In this study there were no underweight individuals with hemoglobin levels in the lowest or highest ranges. All had readings near the central values. It would appear that underweight is not necessarily associated with low hemoglobin values, as underweight did not occur at the lower levels of hemoglobin values to any greater extent than at the higher levels. It should not pass without notice that the greater percentage of higher values of hemoglobin were found among those subjects with normal weights. However, the number of subjects studied would prohibit any definite conclusion in regard to underweight and hemoglobin values.

TABLE 3

Relationship between hemoglobin values and weight

HEMOGLOBIN	NUMBER OF SUBJECTS	PER CENT	OVER-WEIGHT BY 10 PER CENT OR MORE		NORMAL RANGE		UNDER-WEIGHT BY 10 PER CENT OR MORE	
gm./100 cc.				%		%		%
12.0–13.0	1	3.33	0		1	100.0	0	
13.0–14.0	12	40.00	1	8.33	5	41.7	6	50.0
14.0–15.0	13	43.33	1	7.69	8	61.5	4	30.8
15.0–16.0	4	13.33	0		4	100.0	0	
Total.....	30		2	6.57	18	60.0	10	33.3

Sheets and Barrentine (2), in a similar comparison, found that underweight was not associated with low hemoglobin values. The percentage of underweight cases in the groups within the normal hemoglobin range was approximately the same or greater than the percentage of underweight cases in the below-normal range of hemoglobin.

Hemoglobin in Relation to Years of Menstruation

A mean value of 6.73 years was found for the number of years since onset of menstruation, with a range from one to fourteen years. A negative coefficient of correlation between hemoglobin and the onset of the menarche was found to be significant. These data suggest that with an increase in number of years of menstruation, there is a decrease in hemoglobin value. Therefore, the menstrual blood losses may contribute to the lowering of the hemoglobin level.

The arrangement of the data as shown in Table 4 was made to compare the two variates, using two groups only. It may be noted that the mean hemoglobin value of the group in whom menstruation had been established from one to seven years was 14.36 gm. per 100 cc. of blood. For the group in whom menstruation had been established from seven to fourteen years, the value was 14.07 gm. This again suggests that there is a decrease in the hemoglobin value with an increase in the number of years of menstruation.

TABLE 4

Hemoglobin and years of menstruation

YEARS OF MENSTRUATION	NUMBER OF SUBJECTS	HEMOGLOBIN	
		Range	Mean
		gm./100 cc.	*gm./100 cc.*
1–7	13	13.08–15.12	14.36
7–14	17	12.01–15.45	14.07

Leichsenring *et al.* (3) made a similar comparison with data collected on high school girls ranging in age from twelve to nineteen years. The lowest mean values for hemoglobin they obtained were for those groups of girls in whom menstruation had been established for two and three years, and that the highest values were obtained for the groups in whom it had been established four, five, and six years. It was recognized that the lower hemoglobin value for the girls who had menstruated fewer years may be due to the particular phase of the accelerated growth period in which the groups fell. The women in the present study were all past such a growth period.

SUMMARY

Samples of blood from thirty college women were collected, and hemoglobin and erythrocyte determinations were made. From the data collected the following observations were made:

(a) The blood hemoglobin values ranged from 12.01 to 15.52 gm. per 100 cc. of blood with a mean of 14.20 ± 0.79 gm. The erythrocyte counts varied from 3.82 to 5.36 million cells per cubic millimeter of blood with a mean of 4.69 ± 0.42 million.

(b) The correlation coefficients between hemoglobin and erythrocyte value and between hemoglobin value and age were not significant.

(c) It would appear that underweight is not necessarily associated with low hemoglobin value, as underweight did not occur at the lower level of hemoglobin any more frequently than at the higher.

(d) A mean value of 6.73 years was found for the number of years since onset of menstruation, with a range from one to fourteen years. A negative coefficient of correlation between hemoglobin and the onset of the menarche was found to be significant.

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Enrichment of Corn Meal Sponsored in Texas

The popularity of corn meal in the diet of Texans has been verified from several sources brought together by the Texas State Nutrition Council. Twenty-nine grocers in three localities estimated that they sell from one fifth (except one eighth in one case) as much corn meal as flour, up to equal parts of the two grains. In three dormitories in one college from 10 to 20 per cent as much corn meal as flour was reported used. Consumption of corn meal by city families, according to one survey, approximated one fifth of the flour. In another survey, the ratio of corn meal to flour used was reported as 1 to 1.5 for white families and 1 to 1.6 for Negro families. This situation suggested the opportunity of improving the diet of Texans through enrichment of corn meal and grits. Accordingly, the Texas State Nutrition Council and the Community Nutrition Section of the Texas Dietetic Association are cooperating in a project having the enrichment of corn meal and grits as the ultimate goal.

The Texas Extension Service has cooperated with this undertaking by making a survey of the number of mills in the state which grind corn meal and grits and in obtaining millers' estimates of the number of bushels of corn ground annually. The Community Nutrition Section of the Texas Dietetic Association has made an inquiry of the ways in which corn meal and grits are prepared. Corn bread is by far the most popular preparation of meal, followed by mush used in several ways, such as cereal, rice or potato substitute, fried, or as an extender. The Research Committee of the Texas State Nutrition Council has collected eighty-four home recipes for corn bread to determine how Texans make this product. These recipes are being analyzed to show variation in proportions of ingredients. From these analyses will be developed a typical recipe which employs the most common proportions of ingredients. Corn bread made by this recipe will then be used as a standard in comparing corn breads representing the extremes in proportions.

When recipes have been standardized, members of the Research Committee of the Texas State Nutrition Council in their respective laboratories will determine the retention of naturally-occurring B vitamins and enriching ingredients in corn breads made with enriched and non-enriched meal. Some will use chemical and/or microbiological methods; others will conduct bioassays. Preliminary work is now in progress. Subsequently, other typical preparations of corn meal and grits will be standardized and analyzed.

With data on retention in hand, intensive work can begin on an educational campaign to induce Texans to *want* enriched corn meal and grits and to induce millers and merchants to *want* to provide consumers with enriched products. The Community Nutrition Section will take the lead in this campaign. It is the hope that, with the cooperation of the members of the Texas Dietetic Association, the Texas Home Economics Association, and home demonstration agents, the educational material will be presented to various groups in every county of the state. Such groups as county home demonstration councils, parent-teacher associations, women's clubs, and groups including millers and merchants should be interested.

Last will come a drive for appropriate legislation to effect enrichment of all corn meal and grits available in Texas.—*Jessie Whitacre, chairman, Community Nutrition Section, Texas Dietetic Association.*

Retention of the B Vitamins in Beef and Lamb After Stewing

I. Experimental Design and Standardized Cooking Procedure[1]

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METHODS of stewing meat vary considerably in different sections of the United States. Light stews are preferred in some places and brown stews in others. In certain sections of the country, enough water is used to cover the meat completely, and it is served separately. In others, only the smallest possible amount of water is used, and it is served with the meat. Such marked prejudices were found in regard to the proper method of stewing that investigation of all of the variations seemed practical.

The temperature used in stewing meat also varies. A "simmering" temperature has long been recommended for stewing, although practically it is difficult to keep stews below the boiling point for the 2 or 3 hr. needed to make the meat tender. Since the recent introduction of the pressure saucepan, making short cooking periods possible, pressure-cooked stews have become important.

A study of beef and lamb stews was thus planned to discover which of these variables causes the greatest retention of thiamine, riboflavin, pantothenic acid, and niacin. The results will be reported in six parts: I. Experimental Design and Standardized Cooking Procedure; II. Thiamine; III. Pantothenic Acid; IV. Niacin; V. Riboflavin; and VI. Similarities and Differences Among the Four Vitamins.

EXPERIMENTAL DESIGN

The stewing variables were: meat browned and not browned, large and small amount of water, and pressure-cooked, boiled, and simmered stews. The different combinations made twelve different stewing procedures. The experiment was designed so that the data from this large number of variables could be treated statistically by an analysis of variance.

Specially prepared small pieces of meat from each of four carcasses were mixed separately. Exactly 125 gm. of meat from each of the four carcasses were combined in each stew. Enough meat from the same lot was obtained for all of the twelve stews and for four raw samples, making sixteen 500-gm. packages of meat. Replications were obtained with meat from other lots. The total of six replications used included meat from twenty-four carcasses. The sixteen 500-gm. packages of raw meat from each replication were divided equally between two shallow pans, placed one layer deep, frozen, and held in the deep freezer until needed. The eight packages of frozen meat were removed from one of the pans at one time and placed in the laboratory refrigerator to defrost before cooking.

Two days were needed to complete the twelve cooking tests for one replication. The cooking tests for the six variables with the large amount of water were conducted on one day, and the six variables with the small amount of water on another day. Since one week was required to complete the vitamin analyses for each cooking, the two cooking days were separated by an interval of one week except for the first three replications in beef in which this interval was one day. Two weeks were required to complete the analyses of one replication. The order of the tests with large and small amounts of water was alternated, so that differences in time of storage within replications would not influence the results.

The experimental design used with the raw samples made possible two logical combinations of the data on raw meat: those associated with order of analysis and those associated with replications. Statistical analysis of the data treated in these ways and their discussion will be reserved for the final paper of the series.

Constant storage periods (from time of slaughter

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to analysis) were planned for each replication. They were carried out for lamb, but for beef a packing house strike and other emergencies made it necessary to procure the beef for several replications at one time. Since an adequate number of raw samples were used for each replication, the authors consider the differences in beef storage periods to be of minor importance in the retention studies. In the comparisons among raw samples, however, storage period and carcass differences cannot be separated in the tests with beef.

STANDARDIZED COOKING PROCEDURES

Vegetables were not used in the stews reported here. Many people prefer meat stews made without vegetables. Also, certain vegetables, such as potatoes and tomatoes, may influence thiamine retention. The meat was not coated with flour before cooking, as is sometimes done, for the addition of flour might influence thiamine retention, also. The effect of additions of vegetables and flour could not be incorporated easily in the original problem under one experimental design. They will be considered in a subsequent study.

The stew weight of 500 gm. of raw meat furnishes enough meat for four generous servings when the stew is made without vegetables.

Meat for Stews

For beef stews, one brisket from each of four carcasses was boned, and the meat left in one large piece. For lamb stews, the triangle (including breasts, shoulders, neck, and shanks) from four carcasses was boned and the meat left in large pieces. From these large pieces, the small pieces for cooking were cut approximately 1-in. square. Enough of the fat was removed to make all of the meat edible. The varying thickness of the muscles made the thickness of the pieces irregular. The pieces for lamb stews were smaller than for beef stews because of the smaller size of the muscles.

Production histories could not be obtained during the emergency period when the meat for this study was purchased. However, the meat was from carcasses graded "Medium." The beef carcasses weighed approximately 370 to 550 lb. and the lamb carcasses approximately 45 to 65 lb.

Time of Cooking

Cooking times were standardized by numerous previous trials. The aim was to produce meat of equal tenderness by all twelve cooking procedures. This result was obtained by adjustments in cooking time with brown versus light stews, and with simmered versus boiled versus pressure-cooked stews. Actual cooking times are given under the discussion of temperature. The tenderness of all of the experimental stews was such that the meat neither fell into strings (overcooked) nor was too firm to be cut easily with a silver knife (underdone). Within these limits some variation in tenderness was observed in the standardized cooking time. Because the pieces were too small to be tested satisfactorily with the shearing device, they were stuck with a fork. The stewed beef from the last two replications was firmer than that in the preceding replications, leading the investigators to assume that this meat may have been from more mature animals.

Browning

For brown stews, the saucepan was heated by covering with a tin lid. Through a cork in the lid, a thermometer was adjusted to just clear the bottom of the pan. The saucepan was heated over a high flame until the thermometer registered 220°C. (396° F.), then 1 tsp. cooking oil was added, and the pan was tilted quickly to cover the surface with fat. The meat was placed in the pan. Any juice on the paper was scraped off with a spatula and added to the meat. The pan temperature during browning was controlled by adjusting the gas pressure to 30.5 cm. on the mineral oil manometer. As the meat browned, it was stirred with the spatula. The browning period was 10 min.

For light stews, the meat was not browned. The meat and juice were placed in a cool saucepan.

Water

Tap water was added to the meat. For brown stews, the water was cool because there was less spattering than when it was hot. For light stews, however, the water was hot because when boiling water was added to the cool meat, the stew reached cooking temperature more quickly. The volume of broth set as the standard was 400 to 500 cc. for the large amount of water and 100 to 200 cc. for the small amount of water. The quantity of added water was varied according to the cooking temperature and the amount of broth desired. Suitable quantities were determined by numerous previous trials.

Temperature

Pressure-cooked stews. For stews cooked at 15 lb. pressure at 121.1°C. (250°F.), the lid of the saucepan was tightened immediately after the water was added. For brown beef stews the pointer was held at "Cook" (250° F. according to a thermometer installed in the lid) for 18 min.; for light stews the time was 20 min. Less time was required for lamb stews, partly perhaps because of the smaller pieces. Brown lamb stews were held at "Cook" for 12 min. and light stews for 14 min. At the end of the cooking period, the saucepan was placed immediately in a dishpan of cool water and the water splashed over the top to cool the saucepan quickly (approximately 15 seconds).

Boiled stews. The lid of the saucepan was adjusted loosely after the water was added. (The weight was in place to provide the "heavy lid" usually re om-

TABLE 1

*Non-vitamin data on beef and lamb used for stewing**

KIND OF MEAT	RAW	COOKED WITH A LARGE AMOUNT OF WATER						COOKED WITH A SMALL AMOUNT OF WATER					
		Browned			Not browned			Browned			Not browned		
		Pressure-cooked	Boiled	Simmered	Pressure-cooked	Boiled	Simmered	Pressure-cooked	Boiled	Simmered	Pressure-cooked	Boiled	Simmered
Number of pieces of meat per 500 gm.													
Beef	22	22	22	23	22	23	21	23	22	23	22	23	23
Lamb	34	33	35	35	35	35	35	32	34	35	35	34	35
Volume of broth													
		ml.	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*
Beef		459	485	472	488	468	475	133	148	123	199	145	198
Lamb		436	401	477	501	471	508	119	136	127	202	133	218
Loss in weight during cooking													
		%	%	%	%	%	%	%	%	%	%	%	%
Beef		42.6	41.3	41.4	41.0	39.6	38.0	41.4	40.3	40.1	40.7	38.8	38.1
Lamb		45.6	43.5	43.3	44.4	41.7	40.3	44.2	43.0	42.2	44.0	41.9	50.9
pH of meat													
Beef	5.5	5.9	6.0	6.0	6.0	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lamb	5.6	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.1	6.1
Moisture													
	%	%	%	%	%	%	%	%	%	%	%	%	%
Beef	70.0	57.0	56.2	55.5	58.5	57.4	56.8	55.5	54.9	53.5	56.9	55.7	54.9
Lamb	73.5	58.7	57.6	57.3	60.4	58.1	58.9	57.4	56.7	56.7	58.7	56.9	57.9
Ether extract													
	%	%	%	%	%	%	%	%	%	%	%	%	%
Beef	9.4	9.8	12.5	14.7	9.9	14.2	12.8	11.1	13.5	14.8	11.1	13.3	14.9
Lamb	6.8	9.3	11.8	12.3	8.1	12.4	12.4	9.7	11.9	11.2	9.3	12.2	12.1
Dry, fat-free solids													
	%	%	%	%	%	%	%	%	%	%	%	%	%
Beef	20.7	33.3	31.4	29.8	31.6	28.4	30.4	33.4	31.6	31.7	32.1	31.0	30.2
Lamb	19.7	32.1	30.6	30.4	31.5	29.5	28.7	32.9	31.4	32.1	32.0	30.9	30.1

* Values are averages of twenty-four raw and six cooked samples.

mended.) The burner and saucepan containing meat and water were placed on a large solution balance, and the weight at the beginning of the boiling recorded. The weight of the stew was followed closely during cooking. Experience had shown that the final weight must be somewhat less than at the start, since the total volume of liquid is affected by the juices which leave the meat during cooking. Measured amounts of boiling water were added when necessary to maintain the approximate water level and weight. Brown beef stews were boiled 1¾ hr. and light stews 1½ hr. Brown lamb stews were boiled 1 hr. and light stews 1¼ hr.

Simmered stews. The saucepan was covered with a tin lid having a small hole in the top through which was suspended a thermometer adjusted to the right height by a string. The temperature of the liquid was kept between 90° and 95°C. (184 to 203° F.). The thermometer was under constant observation by a worker who recorded maximum and minimum temperatures at 5-min. intervals. The cooking time for brown beef stews was 2½ hr. and 3 hr. for light beef stews. For brown lamb stews it was 2 hr. and for light lamb stews 2 hr. 20 min.

Treatment of Meat after Cooking

The meat was removed from the broth with a large silver spoon. It was weighed and ground immediately through the coarse plate of a household meat grinder, mixed, reground through a special

fine plate, and remixed. Sample dishes were filled with the ground meat. The remainder was used for *p*H determinations using the external electrodes of the Beckman *p*H meter.

Treatment of Broth after Cooking

As soon as the meat was weighed, the coagulated proteins were loosened with a silver spoon from the sides and bottom of the saucepan and the broth poured into a 500-cc. graduate. The broth was allowed to cool in a dark place, and then the volume was recorded. The fat in the broth measured about 5 to 10 cc. (about 1 to 2 per cent of the total volume). No way of removing the fat from the broth was found for the beef stews, but a satisfactory method was devised for the lamb stews done subsequently. Further treatment of the two kinds of broth is described below.

Beef broth. The beef broth was made up to volume, mixed in a Waring Blendor, and aliquots taken with a pipette. The aliquots were digested with enzymes. Since about the same amount of fat was present in the broth from all beef stews, the error caused by fat probably did not affect the comparative values.

Lamb broth. After the broth was poured into the cylinders, the saucepan was rinsed with 100 ml. of tap water into 800 ml. beakers. After the volume of the broth had been recorded, the broth was added to the beakers, and the cylinders were rinsed with hot water from a wash bottle to remove all the protein material. Then 4.13 sodium acetate, 0.5 gm. papain, and 0.5 gm. takadiastase were added and stirred until dissolved. Acetic acid was added to *p*H 4.0 and the electrodes washed with hot water from a wash bottle. Then 20 drops of HCl were added, and the beakers were placed in an oven regulated at 50°C. The next morning, the beakers were placed in an ice water bath to harden the fat. The contents were stirred meanwhile. The solids were allowed to settle and the clear liquid decanted into Buckner funnels and filtered with suction into 100-ml. filter flasks. The fat and solids were washed and stirred with ice water and transferred to the funnels. The filtrate was made up to 1000 ml. From this point, the broth was treated like the filtered meat digest.

NON-VITAMIN DATA

The average number of pieces of meat per 500 gm. was fairly constant for the various stews of beef and of lamb, but the pieces of lamb were smaller and therefore more numerous than for beef (Table 1).

The average volume of broth obtained for the various stewing procedures is given (Table 1). The average amount of water used in all methods of stewing beef for the large amount of water was 475 cc., for the small amount of water, 158 cc. For lamb, stews with large amount of water averaged 466 cc.; those with a small amount of water averaged 156 cc.

TABLE 2

Effect of cooking variables on loss in weight, moisture content and dry, fat-free solids

VARIABLES	NO. OF SAMPLES AVERAGED	LOSS IN WEIGHT		MOISTURE		DRY, FAT-FREE SOLIDS	
		Beef	Lamb	Beef	Lamb	Beef	Lamb
		%	%	%	%	%	%
Raw	24			70.0	73.5	20.7	19.7
Browned	36	41.2	43.6	55.4	57.4	31.9	31.6
Not browned	36	39.4	42.2	56.7	58.5	30.6	30.5
Pressure-cooked	24	41.4	44.6	57.0	58.8	32.6	32.1
Boiled	24	40.0	42.5	56.1	57.3	30.6	30.6
Simmered	24	39.4	41.7	55.2	57.7	30.5	30.3
Large amount of water	36	40.7	43.1	56.9	58.5	30.8	30.5
Small amount of water	36	39.9	42.7	55.2	57.4	31.7	31.6

The loss in weight during cooking was remarkably uniform (Table 1). Browning, temperature of cooking, and amount of water caused only slight differences in weight loss (Table 2).

The *p*H of raw meat averaged 5.5 for beef and 5.6 for lamb. Cooking raised the *p*H from 5.9 to 6.0 for beef and from 6.0 to 6.1 for lamb (Table 1).

Moisture in the raw beef averaged 70 per cent, whereas in the cooked beef, it averaged from 53.6 to 58.5 per cent for the different stewing methods (Table 1). In raw lamb the average moisture was 73.5 per cent, whereas in the cooked lamb it averaged from 56.7 to 60.4 per cent. The differences in the moisture content as a result of variations in browning, temperature, and the amount of water were only slight, if any (Table 2).

Dry, fat-free solids in raw beef averaged 20.7 per cent, while after stewing they averaged from 28.4 to 33.4 per cent for the various stewing methods (Table 1). In raw lamb the average dry, fat-free solids were 19.7 per cent and in the cooked lamb from 28.7 to 32.9 per cent. The dry, fat-free solids appeared to be affected only slightly, if at all, by browning, temperature, or amount of water (Table 2).

Skinless Potatoes

Pre-packed and pre-peeled potatoes are to be on the market soon. The potatoes will be marketed in 5- and 10-lb. moisture-proof bags which are said to keep the potatoes from browning or deteriorating. The new product is expected to cost about 10 per cent more than potatoes unpeeled but, according to the company, the consumer will get about 25 per cent more potato.—*Food Field Reporter, February 17, 1947.*

Job Analysis in Institutional Kitchens[1]

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SOME of the newer methods of determining kitchen equipment requirements make use of techniques developed by the time and motion study engineers.

There are several ways of collecting valuable information in kitchens. One method is to make "process" or flow charts of each of our typical products. You may say that each day's menu is different. That is true, but items in our food factories, for kitchens really are food factories, can be grouped into classes according to the cooking processes involved. For example, meats are roasted, broiled, panbroiled, fried, deep fat fried, stewed, or braised. There are not so many different ways to fix meats. Vegetables are boiled, steamed, mashed, broiled, or baked. By following typical products, it is possible to find the history of each operation in processing, the space requirements for processing, the pieces of equipment needed, and the time required for each process.

Another method of collecting data is by making what industrial engineers call "machine-operation charts." This might also be called "data on equipment usage" and can be obtained by watching each piece of equipment for a stated period, such as a week. Information to be recorded will include the starting and stopping times, the employee using the equipment, the product processed, and the quantity of that product. This will give a case history of the usefulness of each piece of equipment studied.

"Man-operation charts" or records of the activities of representative workers will give information on the movements of workers, why they go to certain places, what they get there, and what they leave or bring back.

What is the reason for all this observation and recording? From it tables of capacities of various pieces of equipment can be developed. These capacities are expressed not only in so many gallons, but in the quantities of the various foods which can actually be processed in the equipment—for example, 7 lb. of frozen peas, 6 qt. of white sauce, or 90 lb. of leg of lamb. Another type of information useful in planning and rearranging equipment is the sequence or routing which products follow. If these are known, the routes used most often can be shortened. Standard time for various jobs is another type of information industry is collecting. Food administrators can also collect timings on repetitive operations and thus be better able to make work schedules.

The advantages of such information are obvious. In planning, the pieces of equipment actually needed and the sizes required will be known. Thus equipment not actually needed can be excluded, in spite of salesmanship. The equipment can be arranged for more effective use of labor by departments and some pieces can be placed in areas accessible to several departments. With all of this, greater production with less help and less expense can be achieved. Workers will be less fatigued, and organized labor will not resist changes of this type. Workers will not resent having the proper equipment or having the equipment arranged conveniently.

Job training is another phase of motion economy. Everyone wants better ways of doing things. During the war some agencies set down some definite steps by which jobs may be analyzed. Let us review these steps and then look at some of the principles of motion economy and work simplification methods.

Step 1 is to break down the job to be done. In doing this, list all details exactly as the job is now being done. Be sure details include all of the items of labor, foods, tools, and equipment. Get a clear picture in your mind of just how the work is done.

Step 2 is to question every detail of a job as it is done. Why is it necessary to do this job? What is its purpose? Where should it be done? When should it be done? If it is to be done, how is "the best way" to do it? In answering these questions, consider the hand and body motions involved, the suitability of the equipment, the arrangement of the work place, the location of the materials or food ingredients to be used, and the safety and comfort of the employees.

[1] Presented at the 29th Annual Meeting of the American Dietetic Association in Cincinnati, on October 17, 1946.

Step 3 is to develop the new method. This step can be done with the cooperation of others. Some places maintain suggestion boxes, sometimes paying for ideas on how to speed up the work. In developing a new method consider first the question of why a job is necessary. Perhaps the complete job could be eliminated or details of the job could be eliminated. One very excellent example of eliminating details is the use of frozen fruits and vegetables. By using them, the time-consuming steps of washing, peeling, shelling, cutting off excess parts, and chopping or cutting the vegetables or fruits can be eliminated. These steps are done by others who have highly specialized machinery and can do it more cheaply. When quality is equal or better, there is no reason to do every process from the very beginning if the price is favorable or not prohibitive. "Why peel eggplant?" a southern student asked me recently. We followed her suggestion and found it satisfactory to leave the peeling on the eggplant. Rearrangement of the equipment will eliminate some steps. At Teachers College Cafeteria dishes have been transported to the basement for washing and then elevated back to the service room. By bringing the dishwashing room to the main floor, at least three employees have been eliminated, thereby saving about $100 per week.

Of the steps which must be done, details should be combined whenever it is practical. For illustration, in the peeling and chopping of onions, if the onions are to be chopped and cooked, it simplifies the peeling process if they are placed in hot water for about 5 min. before peeling, and there will be less "weeping" over the job. In actually peeling, it is easier if the bottoms are cut off and the onions then cut in quarters before peeling. The outer layers almost fall off after the bottoms are removed. Husking corn on the cob is another good example. Most people pull down a few husks at a time and then break them loose at the bottom, or else they break off the entire husk along with the stem at the bottom. It can be done another way. Cut the bottoms of the ears with a heavy knife, making the cut against a hard surface and cutting at about the last row of grain on the cob. If this is done, the husks are loose at the bottom and their removal is a much simpler job. You might call this, rearranging the work in a better sequence or rearranging the order of the steps to be done. It also involves simplifying the necessary details.

Industrial engineers have made detailed studies of all of the motions involved in doing work and have developed a number of principles to assist in making jobs simpler. Let us consider some of these principles and their application to our kitchen work.

Transport-empty is the motion of some means of transportation without a load. It may be a hand, two hands, the entire worker, or some mechanical means of carrying which moves without a load. The hand reaches for a knife, the two arms reach for a mixing bowl, the cook goes for a stock pot, or an empty truck is taken to the refrigerator. How can economy of transport-empty be effected? Can the distance be reduced? Are there barriers which could be removed to provide such transport-empty a better route? Since workers see better within a 60° angle of vision, could the reach be confined within that radius? Can it be arranged to have the material come to the worker rather than having him go for it? Perhaps a less expensive employee could bring it. Transports on a horizontal plane are more easily accomplished than those in a vertical plane. Can these transports be horizontal? Can transport empty occurring when an object must be obtained be combined with a motion of getting rid of some other object?

Grasp is the motion of getting an object under control. This control may be accomplished in a variety of ways. The grasping tool may be fingers, tongs, arms, body, or machines. Is the tool used of the proper shape to grasp the object, such as tongs for grasping a muffin? Can the proper amount be secured with one grasp or on one load? Is it the correct size of ladle or scoop for the portion used? Does the tool truly get the object under control, or can it slide off or loosen? Does the location in the serving pan help to facilitate this grasp?

Transport-loaded is the carrying of an object or load from one place to another. The pencil is carried to the paper. The ladle of soup is carried to the bowl. The tray of dishes is taken from the clean dish table to storage. Motion economy can be applied here. Can the distance be reduced? Can trucks, trays, or conveyors be used? Can this be made a multiple handling, taking several or a great number of objects at one time? Is all the movement in one direction, always toward the point of service or is there back-tracking? Can the material be moved in one plane? The old method of dish subveying and elevating at Teachers College was very costly both in labor and dishes. In the simpler jobs at one location, can the materials and equipment be arranged to eliminate the passing of material from one hand to another? Would a tool assist in the transport, such as gloves in handling hot dishes?

Release is the opposite of grasp and is the relinquishing of control. Of course, this varies from dropping a small object, such as a pencil, to dumping something like a load of coal. To economize on motion, can several objects be released at one time? Could the objects be dropped rather than set aside? Could the pieces be tossed, such as potatoes into a bucket, rather than place-released, which is a very controlled movement?

Is the release at a spot which requires no lifting as when the top of a bucket is placed below the working level when the eyes are being removed from potatoes? Can the materials be dumped in one movement rather than ladled in many? Curved move-

ments are accomplished much more readily than abrupt changes of direction. Can trucks turn corners without stopping?

Holding—another motion—is the retaining of an object while work is being performed on it. The hand, especially the left hand, is often used for this, and it is time-consuming and dangerous. The holding hand often gets hurt, for the worker is conscious only of the working hand. Can dangerous holds be eliminated? Is peeling done against a board? Does the worker cut away from himself? Can guides and stops be used to hold materials in place? Edges on shelves and trucks prevent trays from sliding off the shelves. A marine edge on the cook's table and sink prevents spilled liquids from running on the floor.

Prepositioning is the locating of an article in the approximate position for the next operation. An excellent example of a prepositioned tool is the desk fountain pen. It is ready to be used. The ordinary fountain pen requires six movements before the pen is ready to write—grasping, transporting to other hand, grasping the cap, unscrewing the cap, releasing the cap, and getting pen into writing position. The prepositioned pen requires only grasping. Are all tools prepositioned close to the point where they are used? Are pans placed conveniently by the pot washer? Food parts could be prepositioned. For example, toast made in a broiler could be toasted right in the counter pans and thus be ready for covering with broccoli and cheese sauce. Do less expensive employees do all of the prepositioning of materials possible? Are plates positioned on trays while the hands are clean before desserts are set up?

Positioning is the placing of an object in an exact and predetermined location. This often requires considerable adjustment, as in gauging the thickness of a cut of meat. Because it is so exact, it is a time-consuming motion. Could guides be used for eliminating controlled motions? Guides commonly found in kitchens include funnels, side and back stops on soiled and clean dish tables, and the special peeler for carrots and other vegetables which determines thickness by the set of the blade.

Searching or locating objects with some uncertainty is always time-consuming. The search may involve the eyes, the hands, or all members of the body. *Finding* is the desired end of searching. *Selecting* is making a mental choice if several objects are found. The separation of these three movements is hard, but the combined movement can involve only selection if tools and materials are conveniently located and returned to their proper positions. Different colored trays, labels, or cans may be used to assist in selection. Good lighting will assist. Indexing and arranging stocks will reduce searching time.

Assembling is the motion or several motions needed to combine several objects or parts of machinery which will aid in more useful movements to follow. A mixer or slicer is assembled to use later. A food cutter or chopper is put together. The simpler this assembly can be and the more foolproof it can be made for the operator, the more quickly it can be accomplished.

Disassembling is the opposite motion—the taking apart of machinery to release objects or to facilitate cleaning. We should consider whether the tool is in scale with the job to be accomplished. Possibly we are "swatting flies with heavy machinery." Sometimes the assembly, disassembly, and cleaning make the tool a "modern inconvenience."

Use, according to the industrial engineers, is the only element which determines productive output. The actual *mixing*, *slicing*, *cooking*, and *serving* are the "use" motions in kitchens. These motions cause a direct commodity change which enhances the value of the product. Industry has noted that less than 5 per cent of the total time spent in manufacturing a product is "use time." Except for long cookery times, food production would probably be comparable. When electronic cooking becomes general, "use time" will be lessened.

Inspection, another fundamental motion, is the act of examining to see whether the object meets established standards. It may employ any of the senses—sight, smell, or feel. Food is examined for taste, appearance, and temperature, when it is ready to be served. Produce delivered is examined, weighed, and counted. Can inspection be reduced by weighing instead of counting, if the number of portions does not depend on the number of cases or units involved? Eggs can be weighed to reveal whether the proper number has been received.

Delays are of several types. *Balance delay* is a wait for the movement of one body member for another or a machine. In some cases movements can be balanced by more symmetrical arrangements of the work area. Is each hand doing its share of the work, especially if hand motions are simultaneous?

Another type of delay is *avoidable delay*. Such a delay is not necessary in the process. It is illustrated by the dropped knife, the failure to order planned foods, the deliberate waste of time in stalling, daydreaming, and such, or the using of improper tools, equipment, and temperatures. Is the operator trained properly for this job? Are all the working conditions made correct for this job? Does the supervisor establish and maintain relationships conducive for working? Are hazards to safety eliminated?

Unavoidable delays are delays outside the control of the operator. The gas is turned off, a fuse burns out, a tumbler breaks, or the mixer is broken. It is within the power of administrators and supervisors to reduce these delays. Are sufficient supplies on hand? Are proper tools provided, and are repairs and maintenance adequate? Are the operators

using the proper tools? Is working space crowded? Is the employee working overtime when tired? Is the division of work among several operators according to time allotted and abilities?

Planning is a mental activity in which the course of action is decided. It may be the consulting of a recipe or work sheet. Most planning should be done by supervisors so that cooks and bakers will have little to decide, or it may be done at a definite time in consultation, thus eliminating the need of questioning on one point at a time.

Planned rest should overcome fatigue. Necessity for it will be reduced if other motions have been well planned. The reduction of noise, provision of sufficient ventilation, insistence on proper clothing, such as shoes, and selection of properly trained employees will reduce fatigue.

These are some of the more outstanding considerations which should be taken into account.

There is one more step in the job analysis. Step 4 is to apply the new method. It will clarify the ideas on "savings" made if a proposal is written, either by the administrator or an appointed supervisor. It will also help to sell the new method to others. The advantages of the new method and arrangement and how it will operate should be explained. Of course, necessary approval should be obtained so that everyone concerned will have been consulted. Check on the safety, quality, and cost of each step. Put the new method into use. Waiting kills ideas. Use the new method until a still better one is developed, but continue to look for a better way. Recognize the assistance others have given, for giving credit stimulates more ideas.

However, approach these changes with the idea of making the work easier for the employees. Never mention speed-up or reduction of labor costs; it will defeat your project. Remember, it is economy of motion and not the speed with which the elements are performed that should be the purpose of the study.

EXTENSION SERVICE FOR RESORT OPERATORS

Extension work in the institution field was initiated two years ago by Michigan State College. The work has thus far been limited to the small resort operator. However, some contacts have been made with community groups who prepare and serve church suppers, boarding house keepers who rent rooms and feed deer hunters during the hunting season, as well as an occasional town or city restaurant which has asked for help. On one occasion, a department store tearoom was given service. In addition to personal visits, there has also been a tremendous volume of correspondence with people who write for help of one kind or another in connection with food service.

Visits to resorts have, of necessity, been made during the summer. During the winter the preparation of literature to help such operators has gone ahead. Short courses, chiefly for resort operators, have also been planned, some of which have been given on the campus at East Lansing and some in the more thickly populated resort areas. Some of these meetings have been conducted for operators, some for county extension workers and home demonstration agents who are often asked questions in the field of food service.

In addition to the help on food service, there are also workers available to help in planning cabins and cottages and in landscaping property.

Michigan State is the second college to have an extension worker in the institution field, Cornell University being the first. The project at Michigan State was initiated when Mabelle S. Ehlers, head of the Department of Institution Administration suggested that it was a field in which work needed to be done, since resorts generally were doing an inadequate job of food preparation and service and since numerous requests for help were received. Before her untimely death, Faith McAuley had done much of the spade work for this program, visiting hunting camps and resorts and preparing the first three pamphlets of a Tourist and Resort Series on quantity food service. Their titles are: *Soups, Menu Making and Menus,* and *For Luncheon or Supper.* The work is continuing under the direction of Mrs. Ehlers and plans for its expansion are under way.

Layout of the Dishwashing Department[1]

H. A. NORDQUIST

The Hobart Manufacturing Company, Troy, Ohio

THE DISH pantry can be a bright spot in the operation of your kitchen, and dishwashing can be a pleasant task when the work is well organized and the necessary facilities are available. The confusion resulting from such practices as the piling of all soiled tableware in one heap is the real reason why dishwashing is so often classified as drudgery. Actually, the producing of clean tableware can be just as pleasant as many other kitchen tasks.

Let us first consider the objectives of the dishwashing operation. Good end results add up to:

(a) Sparkling tableware.
(b) Low cost of dishwashing operation.
(c) Reduced turnover of employees.
(d) Lower china replacement.
(e) High production of clean tableware.
(f) Pleasing sanitation.

These end results, in turn, reflect a combination of:

(a) Careful planning of layout by a good kitchen engineer working closely with the kitchen manager.
(b) Selection of the right dishwashing machine.
(c) Installation of supporting facilities required for good operation.
(d) Good organization of competent personnel.

The requirements for a good layout include:

(a) Enough space. To get the advantage of the full capacity of the machine, there should be enough room for dish tables large enough to permit efficient handling of the tableware.

(b) Good flow. The table arrangement should provide for a good flow of dishes from a convenient point where soiled tableware is deposited on to the point of storage.

(c) A soiled dish table. This table should provide space for convenient depositing of the soiled dishes on the basis of preliminary sorting, a good rack loading zone, and a suitable runway for guiding the racks into the machine with smooth action.

(d) A clean dish table. Enough space for the movement of the racks of clean dishes will be needed so that the operator may wait a full minute after the racks have left the machine before touching the dishes (for air-drying of china).

(e) A rack return. A slide, roller, or belt arrangement is needed for quickly and easily returning empty racks to the loading zone on the soiled dish table.

(f) An unloading space. A shelf or table space will be required for stacking clean dishes, clean silverware, and stacking loaded cup racks (where they are used for washing, transporting, and storage of cups).

A place for everything is a good rule to follow in planning both the soiled dish table and the arrangements for the handling of clean tableware. The layout of the facilities for the dish pantry should, of course, conform with the overall operation of the kitchen and should provide for operation as contemplated by the kitchen manager. An important requirement in planning the dish pantry is that equipment and facilities promote effective operation with the methods preferred by the kitchen manager. In other words, the layout should be tailor-made to fit the requirements.

In Figure 1 a platform-type layout is shown. This is admittedly an idealistic layout designed to show features that can be incorporated in actual layouts. It also brings out the possibilities for good organization of personnel resulting from a good arrangement of facilities.

With this arrangement of facilities, the waitress or bus boy places the loaded tray on the extension of the table and inverts glasses in the proper racks so that the liquids pass through the bottom of the rack onto the table which is pitched to the center drain. She drops the napkins in the chute, places the silverware in the baskets in the silver soaking pan, inverts the cups in the rack provided, places the balance of the tableware on the soiled dish table, and leaves the empty tray at the end of the table.

The operator of the glasswashing machine applies the glasses to the rotating brushes, places them in a rack, rinses them by the rackfull, and then stacks the loaded racks of clean glasses on the truck for transporting to the point of use.

The first dish machine operator places the plates in racks, slides loaded racks of cups and plates toward the machine, and empties the filled baskets of silverware into racks. Incidentally, each basket holds

[1] Presented at the 29th Annual Meeting of the American Dietetic Association on October 16, 1946, at Cincinnati.

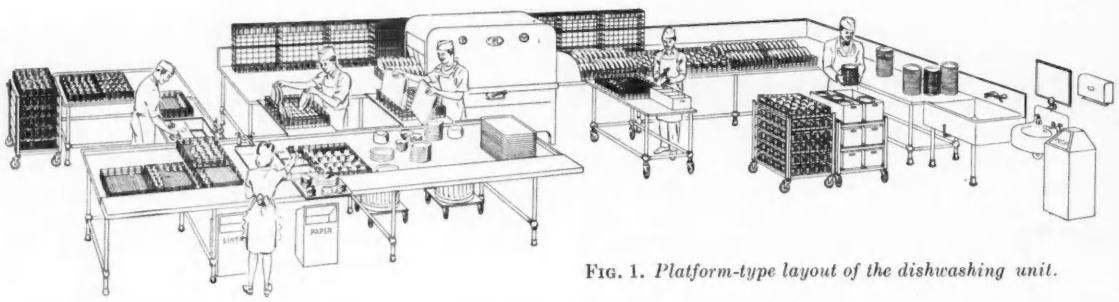

FIG. 1. *Platform-type layout of the dishwashing unit.*

just the right amount of silverware for the rack which goes through the machine. The silver soaking pan is a portable unit—a pan about 12 by 18 in. with three perforated metal baskets. When filled with water and a small amount of compound, it becomes an arrangement for soaking, measuring, and preventing the loss of silverware which occurs when the silverware is dumped on the dish table along with the dishes.

During the peak period an extra operator may be used to load trays and flatware. After the rush he goes on to other work and the first operator takes over all of the work at the soiled dish end.

As the racks are fed into the machine, dishes are automatically washed and rinsed, and the conveyor pushes the racks of clean dishes along the clean dish table. The first operator at this end of the machine sidetracks the silverware, dries it while it is piping hot, and drops it into the silver box.

The china air-dries as it moves along to the end of the clean dish table. Plates are then stacked and the second operator places them in trucks for transporting to the point of storage. Notice that the cups are handled individually just once—when they are placed in the rack by the waitress, for they are stored in the same rack in which they were washed.

The empty plate and silverware racks are turned up on their sides and pushed along the rack return behind the machine to the loading zone where they are reused.

To illustrate some of these points without complicating the drawing, such things as shelves above and below the tables have been purposely omitted. Often space limitations suggest a shelf above the soiled dish table, perhaps a tilted shelf for racks into which the waitresses or bus boys place cups and other items of tableware.

The second drawing (Fig. 2) shows what is termed a straight-wall layout. This is a simple arrangement for the smaller kitchens and can, of course, be modified to conform with the actual requirements and space available.

With this layout the soiled dishes are sorted on the first section of the table, scraps are removed, and the dishes are loaded into the racks placed in the loading zone. After the dishes have been washed and rinsed, the racks are moved along the clean dish table. The china is allowed to air-dry and is then ready to be transported to the point of storage. As the dish racks are emptied, they are turned on their sides and pushed back to the loading zone.

Figure 3 illustrates the hollow square layout. This drawing suggests arrangements for orderly depositing of the soiled tableware and good organization of the work for producing sparkling tableware with a minimum of effort.

A hose connection and a quick drain for the soiled dish table will facilitate cleaning. The principal purpose of the quick drain is, of course, to carry off liquids and to keep unused food out of the dishwashing machine, but it can also be used to facilitate the job of hosing down the soiled dish table.

One of the essential requirements for a good job of dishwashing is a good supply of really hot water. In most institutions, the building supply is maintained at a temperature of about 140°F. For good bacteria reduction the temperature of the fresh water rinse should be at least 170°F. Rather than raise the temperature of the water supply for the entire building, booster heaters may be installed to raise the temperature of the water used for the rinsing of the tableware.

A good supply of really hot water will not only insure good bacteria reduction but will also result in rapid air-drying of the china. If the facilities do not include equipment for a good fresh water rinse, a plumber will be glad to advise you on the installation of a booster heater. If steam is available, either a steam coil booster unit or a steam mixing valve may be used. For boosting the temperature by means of gas, an auxiliary storage tank and a gas hot water heater of the required capacity may be used.

A list of other accessories that aid in efficient operation includes:

(a) Thermometers for both the wash and rinse waters so that both you and the health officer can easily check on the operation.

(b) Line strainers so that pipe scale and sediment is kept away from the operating valves of the machine and clogging of the rinse sprayers is prevented.

(c) Pressure reducing valves for economy of operation if there is a high pressure water supply.

In many of the newer kitchens the dishwashing

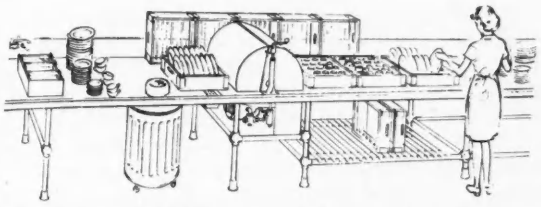

FIG. 2. *Straight-wall arrangement of dishwashing equipment.*

rooms are well ventilated and well lighted, and the walls and ceilings are covered with sound-absorbing materials.

With good facilities and equipment and organization of the work, dishwashing becomes a pleasant task for which high type of personnel may be employed. In fact, there is only one part of the job that might be considered unpleasant, and that is the removal of unconsumed foods from the plates.

The methods commonly used for removing unconsumed foods from plates include thumping the plate on the scrapping block, brushing it off with a rubber scraper or brush, or swiping the plate with the edge of the hand. As added assurance of a good job of dishwashing and a further contribution toward pleasant operation the removal of unconsumed foods by means of pre-rinsing in a stream of water is desirable.

The suggested arrangement includes a built-in sink extending over the full width of the dish table, a removable perforated metal basket, a removable rack track, a suspended shower head, and front and back shields to catch the splash. With this arrangement the operator places the plates in the rack, slides the rack over the sink arrangement, and removes the food by a simple flushing action. The liquid waste goes down the sewer, the solids are caught in the perforated basket, and the dishes are conditioned for quick and thorough washing.

After the physical layout and equipment of the dish pantry have been planned to the greatest advantage, the work itself should also be "laid out."[2] Machine operators should be properly trained.[3] It

[2] A small pamphlet titled *Check List for Better Dishwashing* will help the kitchen manager in evaluating dishwashing procedures.

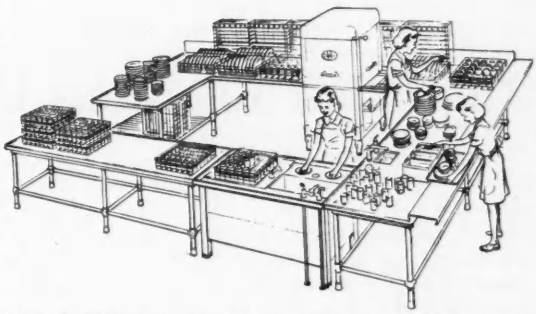

FIG. 3. *Hollow square layout applied to the dishwashing operation.*

may be wise to place one person in charge of the dish pantry and delegate responsibility to that person for the proper functioning of the work. The equipment should be properly maintained.[4]

Careful consideration should also be given to what happens to the sparkling tableware between the time it leaves the dish pantry and the time it is used by the patron. Too often the effect of the good work in the dish pantry is ruined by careless handling or improper storage. Silverware is often handled by the tines of the forks and the bowls of the spoons. Operators frequently handle cups by contact with the rims and touch the inside of the glassware.[5]

Thus it is seen that sparkling tableware and good sanitation can be achieved only by constant watchfulness and alertness from the time tableware leaves the dining room until it is again used by a patron. The objectives mentioned at the beginning of this paper, however, can be realized through careful planning, training of personnel, and installation of proper equipment and facilities.

[3] "Suggestions for Dish-Machine Operators," a chart suitable for posting on the wall, may be used in training and keeping dish machine operators alert to the requirements of their jobs.

[4] A four-page folder, "Suggestions for the Kitchen Manager," is available which outlines organization of the dish pantry, including personnel assignment and cleaning and maintenance of dishwashing facilities.

[5] "Proper Handling of Tableware," a chart suitable for wall mounting, shows illustrations of the right and wrong ways to handle tableware after it has been washed.

Diet Therapy in Tuberculosis

Most tuberculosis administrators should agree that the more logical basis on which to estimate the cost of food for the tuberculous patient is *the cost per patient per period of arrestment* rather than the cost per day. If a highly nutritious diet at somewhat greater cost will restore a patient to health in a shorter time than a less expensive diet of poor nutritive quality, the end result is economy in time and taxpayers' money. In addition, it is felt that a highly vital diet can build the resistance of an individual to his disease and help him to maintain his health so as to continue as a serviceable member of society. *Dr. Andrew G. Goesl, assistant chief, Tuberculosis Section, Veterans Administration Branch Office No. 7, in an address given before a conference of dietitians of the Veterans Administration in Chicago on February 27.*

The Labor Relations Puzzle[1]

A. HOWARD MYERS

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WITH the end of the war, the nation has been enjoying less peace on the domestic front than in pre-atom smashing days. The Department of Labor's measure of industrial disturbance—man days idle due to strikes—has been running almost twice the figure for the corresponding month in 1945, and well over twice the 1939 monthly average. To an inquiry as to the labor relations outlook, one could appropriately reply, "Snafu," which is the military equivalent for "Situation normal—all fouled up." To the question "Why?" as with any other puzzle, attention must be focused on causes.

Superficially, the condition can be ascribed to the accumulated grievances and dissatisfactions pent up during the wartime embargo on strikes and free collective bargaining. The reduction in take-home pay by reason of shorter hours of work, elimination of highly paid war jobs, the jump in the cost of living, and the abrupt elimination of the wage controls and of the War Labor Board as an instrument for ironing out industrial strife are all factors contributing to the chaos.

More fundamentally, however, the developments could have been anticipated as a result of the great increase in the number of workers whose working conditions are negotiated by collective bargaining. This means that no longer will wages and related items lag behind prices and other economic changes. In the past twelve years the number of workers who are represented by unions has increased fivefold from 3 to 15 million. To put it another way, one out of three workers is today employed under the terms of a union agreement negotiated with management instead of one out of about fourteen or fifteen.

This growth has been, to a large degree, the result of a change in governmental policy, paralleling the impersonalization of employer-employee relations which resulted from the growth of big business units. From a governmental attitude of hostility to unions in the last century, there evolved a policy of toleration of collective bargaining in the last war of 1917–1918. Today, we have a governmental policy of encouraging workers' complete autonomy by restraining management from preventing unionization in any way—by word of mouth, by discrimination against union men, by assisting company unions, or by refusing to deal with unions chosen freely by a majority of the workers in a government-conducted poll.

Most of this change in the pattern of labor relations has been due to the enactment of the National Labor Relations Act, which sought to reduce some of the economic hazards for American workers by encouraging self-help through organization. Although the law covers only business in or affecting interstate commerce, the managerial responsibilities of dietitians may be affected by this national pattern even though your professional efforts are limited to a local business or a non-profit organization. The desire for unionization is not limited to workers in interstate activity, as is recognized in several states which have statutes similar to the National Labor Relations Act. You may also be affected by the impact of the labor relations problem of your suppliers, your trucking facilities, your taxi, telephone, or electric power facilities.

What can be done about this perplexing problem? The large subject of government policy will not be discussed here, except to point out that, in all probability, present obligations and prohibitions are here to stay. If public opinion may be considered a sound basis for prediction, an Opinion Research Corporation poll, published in August, 1946, may be cited which showed that public support of the principle of collective bargaining has remained remarkably steady in spite of strikes and labor strife. Although 80 per cent of the general public in 1941 favored guaranteeing workers the right to form unions and to bargain with their employers, in 1946 those favoring this policy had increased to 85 per cent. Among workers, 90 per cent favored this legislation. It is clear that unions are now regarded as a necessary part of the American system of checks and balances in economic and political affairs, as they must be in a balanced democratic state.

For several years there has been considerable discussion on the subject of unionization of employees of

[1] Presented at the 29th Annual Meeting of the American Dietetic Association in Cincinnati on October 17, 1946.

social welfare institutions. It is argued by many that there is no need for collective bargaining in situations where the profit element is absent. This would seem to be begging the whole question, since employees are the ones who decide whether or not they need collective bargaining. Since in many institutions stenographers and kitchen workers are today deciding that question in the affirmative, the question of who pays the bills does not appear to be the controlling factor. If unions are wholesome for a democratic society, they cannot be banned in nonprofit activities.

What then can each individual who is a participant in this labor-management equation do to make the program work better? It is clear that neither labor nor management has shown any great maturity in its approach to the new responsibilities in most instances. Both parties need to recognize that collective bargaining means joint and cooperative effort rather than warfare. Yet too often each speaks and acts as if it possessed a monopoly on rights, on rightness, and on righteousness. Too often mutual suspicion and a fear psychosis exist, with each party certain that the other "has something up its sleeve."

It may be naive to urge cooperation between labor and management, but it is certainly sound to emphasize that to be on guard constantly toward someone with whom you are working and dealing makes for hostility and friction. Where such attitudes are based on emotional factors, as they most frequently are, their existence results in mutual loss. A great deal of our recent difficulties are due to such conditioning.

Generally speaking, the tone of the relationship between an employer and the employees, whether organized or unorganized, is set by the top management. This is particularly true in the early stages of collective bargaining, for it is then that it is determined whether the union is to be resented and resisted or made a constructive factor, an integral part of the business rather than an obstructive appendage. If employees' interests and welfare are a responsibility of management, and in the writer's opinion some degree of paternal interest is an essential obligation of management, that responsibility remains after unionization as before. It is no reflection on either the management, the workers, or their representatives if employees decide that in union there is strength. The employer who thinks honestly knows that the individual worker acting alone not only has inferior bargaining power but that he had no bargaining power at all from 1929 to 1939 when the labor supply greatly exceeded the demand for workers. Therefore, to take away group insurance or Thanksgiving turkeys because the boys "joined up" is a childish act—and it may be found to be illegal!

A union can be developed into as effective an instrument for communications between upper management and the workers as any management-sponsored representation plan ever hoped to be, and without the stultifying effects of such plans on the worker's imagination. A union is, in fact, essentially an instrument for communicating workers' wants and viewpoints to management, and the latter can encourage that process in both directions. When the union steward objects to a supervisory decision or a working condition, management is too often inclined to consider it an impertinence. It is better to understand that the union delegate is an elected advocate whose duty it is to communicate workers' dissatisfactions and grievances to the responsible party who can correct them. Advocates are not selected to decide that complaints lack merit.

Both labor and management representatives are steps in a chain of procedures, and each should try to take an objective rather than a personal attitude toward the other, minimizing personal feelings but encouraging interest in helping to do a mutual job well. Only in this manner can labor relations communications be made more effective through mutual assistance in determining what, if anything, is at the bottom of the complaint. Even where a grievance is purely imaginary, it is still real as long as it exists in someone's mind. It is much more fruitful to try to find out why the state of mind exists and why it is in error than to argue dogmatically as to who is right.

The essence of good labor relations lies in mutual interest and desire by the employer and the employee to understand each other's problems and to solve them. Collective bargaining can be an indispensable instrument toward this end, but this requires open mindedness in place of the "dictator" principle, a progressive attitude rather than the normal mental inertia. Decisions based on favoritism or impulse must be replaced by decisions based on all relevant facts, on orderly programs, and on well defined responsibilities.

It is necessary to understand the union's methods and limitations as well, and to understand that union leaders have their problems. The union is a group and, therefore, a political institution; the more democratically it is run, the more political its problems may be. Even though the committee with whom management is negotiating may realize that the demands of the union are excessive, its members may be in no position to modify them until the whole union group has the same opinion. Presentation of facts and figures by management will aid in educating the committee and the whole group. Too often the attitude of "it's none of your business" prevails. Because the management and the union have different approaches and interests in many situations, it is all the more necessary that each try to put itself in the other's position. A union committee educated in this regard can be a substantial aid in working out management's problems.

Those who are ground between the irresistible

force of increased wage demands and the immovable wall of a budget or a profit and loss statement may well be asking whether the application of these generalities can eliminate clashes over the substantive issues of wages, discharges, union shops, or work distribution. That such differences will still exist is, of course, unavoidable. Union representatives, however, do recognize the "facts of life" if management representatives properly present the limitations of budgets, material costs, or profit margins under which they operate. Of course, no union will agree to less than a living or a going wage, nor can management expect the workers to subsidize a non-profit or welfare institution by substandard pay or excessive hours.

Where cooperative labor relations exist, arbitration is available as a final determinant of disputes over wages, discharges, and working conditions. It is utilized in thousands of cases each year, cases which never reach the newspaper headlines.

The union security issue, that is, the closed shop, has not loomed large in the postwar scene, but it is constantly grumbling. Management cannot hope to maintain good labor relations where free riders among the workers enjoy the benefits of the union agreement. We pay our taxes irrespective of how often we call on the government for help. By the same token, workers can be expected to contribute through dues to the unions' treasuries.

To be a stabilizing rather than a disruptive factor in a plant, a union must be secure, strong, unified. A strong union with influence over all the workers is much more of an asset to management than a weak, ineffective group. The leaders will be as influential as they have prestige, support, and confidence from both workers and management. For management to waste effort in trying to avoid a strong union and strong leadership is to beg for trouble. Whether union leaders are to be the militant type or the responsible administrative type is largely a decision for management to make in its attitude toward union security. The way in which industry accepts this challenge in human engineering will largely decide the type of union leadership in the nation's future.

As a contemporary philosopher, Morris R. Cohen, has stated, "In the end there is no way in which people can live together decently, unless each individual or group realizes that the whole of truth and virtue is not exclusively in its possession. This is a hard lesson to learn but without it there can be no humane civilization. This principle is as applicable to our modern [labor relations] problem as to the early religious conflicts. If a way out is to be found, the eventual path must lead along the way of understanding" (1).

The self-restraint of both management and labor in the present chaotic period and the absence of the historical pattern of violence—of property damage and bloodshed—indicate that labor relations are on a new plane of mutual respect. In spite of current stresses and strains, there is, therefore, some basis for optimism in assaying the future of American labor relations for the long pull. But this will not be accomplished without considerable conscious effort, and conscientious effort.

REFERENCE

(1) COHEN, M. R.: The Faith of a Liberal. New York: Henry Holt & Co., 1946.

DELETERIOUS FACTOR IN WHOLE WHEAT BREAD

Hitchings and Falco of the Wellcome Research Laboratories, Tuckahoe, N. Y., showed that mice fed Purina fox chow, Rockland mouse diet, or Robinson and Siegel's stock diet are highly susceptible to experimental I pneumococcus infection. In contrast, mice fed a purified synthetic diet containing all known vitamins and other essential food elements are resistant to 100,000 lethal doses of the same culture. As an explanation of this increased resistance, Hitchens assumed that the crude foodstuffs of commercial diets contain some unknown deleterious factor. This factor is presumably more beneficial to the parasitic growth of the pneumococcus than to the animal consuming the food. Their more recent study concerned the deleterious effects of whole wheat bread. Preliminary tests had shown that aqueous extracts of whole wheat flour are much richer in factors stimulating the in vitro growth of the pneumococcus than control extracts of white flour. One hundred mice were therefore maintained solely on white bread or whole wheat bread for six days before injection with pneumococci. Of the fifty mice maintained on white bread, twenty (or 40 per cent) survived the experimental infection. Of the forty-nine mice fed exclusively on whole wheat bread, only one mouse (or 2 per cent) survived. Presumably there is superiority of white bread over whole wheat bread measured by comparative resistance to experimental pneumococcic infection.—*From Current Comment, J.A.M.A. 133: (February 8) 401, 1947.*

Editorial

WHAT IS THE VALUE OF CARBONATED BEVERAGES?

In view of the controversial aspects connected with the use of carbonated beverages, the recent survey made by a commercial (consumer relations) organization for one of its clients is of interest.

Questionnaires were sent by this organization to head dietitians in over 1000 hospitals for the purpose of determining the extent to which carbonated beverages are used in these institutions. The hospitals chosen were considered to be representative of the 6611 registered hospitals with more than 100 beds. Three hundred eighty replies were obtained.

Approximately 85 per cent of the replies indicated that carbonated beverages were used in one or more ways. On the other hand, a significant number (13.9 per cent) of the dietitians replied that they made no use of carbonated beverages whatsoever.

What consideration should be given to the use of carbonated beverages in hospitals? How does such use affect the individual in relation to dental health, medical care, and nutritional health? What effects do these carbonated sugar sirups have on the appetite? What effects do these products have on the use of foods of greater nutritional advantage? Does the use of these beverages in the hospital imply sanction for the use in the home? What alternatives provide an advantageous substitution?

In order that up-to-date, pertinent viewpoints might be obtained from those concerned directly with the care of patients, Dr. James R. Wilson, secretary of the Council on Foods and Nutrition of the American Medical Association, Dr. W. A. Blayney, director, Zoller Dental Clinic, University of Chicago Clinics, and Eva N. Ylvisaker, chief, Dietary Department, Children's Hospital, Cincinnati, were invited to make editorial comments on the use of carbonated beverages in the hospital. The editorials follow. Comments are also invited from our readers.

MEDICAL ASPECTS OF THE USE OF CARBONATED BEVERAGES IN THE HOSPITAL DIET

The inclusion of sweetened carbonated beverages on the regular hospital dietary is inconsistent with the cultivation of good eating habits and with good nutritional practice.

The views of the Council on Foods and Nutrition of the American Medical Association on the nutritional aspects of sugar, candy, and sweetened carbonated beverages were the subject of a report published in 1942.[1] It was pointed out that sugar, a highly processed food furnishing fuel alone, when taken in quantity or too frequently, deadens the appetite and replaces other essential foods which contribute to the good diet. In a discussion of the desirability of restricting the use of sugar, sweetened carbonated beverages were mentioned. Subsequent developments have not stimulated the Council to express a changed attitude.

In 1946, it published the following opinion[2]: "Food advertising that obscures the facts of good nutrition by encouraging too liberal use of sweets or of sweetened carbonated beverages should be condemned."

Even though in hospital practice there may be times when it is desired to give water and sugar to the patient in the form of a carbonated drink for psychological or other reasons, nevertheless it should be given to the patient only on prescription. This precaution is necessary because of its effect on nutrition and because some of the beverages contain caffeine and condiments which may be contraindicated.

Sweetened carbonated beverages have their legitimate uses, but it also true that they should not replace foods of superior nutritional quality or be given in such quantity as to jade the appetite. It is the responsibility of the person in charge to try to supply equally attractive beverages of greater nutritive merit.—*James R. Wilson, M.D., secretary, Council on Foods and Nutrition of the American Medical Association.*

HOW DOES THE USE OF CARBONATED BEVERAGES AFFECT DENTAL HEALTH?

Dental caries, commonly known as tooth decay, is primarily a disease of childhood and adolescence. The disease, although non-dramatic in character, is a public health problem of first importance. The American youth suffers in innumerable ways from

[1] Council on Foods and Nutrition. Some nutritional aspects of sugar, candy, and sweetened carbonated beverages. J. A. M. A. 120: 763, 1942.

[2] Council on Foods and Nutrition. General Decisions on Foods and Food Advertising. Chicago: American Medical Association, 1946, p. 48.

the ravages of tooth decay. Dental defects were responsible for the rejection of 20 per cent of the first 900,000 draftees for World War II. Dental disease is responsible for more absenteeism from the school room than any other condition. Approximately 20 per cent of the population seek regular dental treatment. Probably another 10 per cent receive incomplete dental service. The remaining 70 per cent are content with sporadic treatment that is largely of a palliative nature.

When children enter school at the age of six years, 15.9 per cent have carious processes in some of their teeth and by the time they have reached eighteen years of age, decay has progressed to the point where 96.6 per cent have suffered from tooth decay. A careful study has revealed that it would require the placement of 244 million fillings to treat all of the cavities present in the six- to eighteen-year-old age groups in this country and that the annual increment of caries would require the placement of 33 million fillings. The Surgeon General of the U. S. Public Health Service has estimated that the cost of providing service for all the dental treatment needed today by the citizens of this country would be $4,071,500,000, and that the annual increment for the treatment of dental disease would cost $1,300,000,000—nine times the total annual income of the entire dental profession.

The dental profession is totally unable to stem the tide of tooth decay by filling operations. Corrective measures have failed. Prevention is our only recourse. As with other diseases—for example, tuberculosis and typhoid fever—education of the public regarding the causes, methods of control, and prevention is of prime importance.

While the final chapter regarding our understanding of tooth decay has not been written, we do know that the incidence of caries can be reduced if we utilize all of the available knowledge. It is not necessary that we have a complete understanding of the bacteriology, immunology, chemistry, and pathology of a disease before we consider ways and means for its prevention. Laboratory investigation has shown that the mineral salts of the tooth are removed and decay started by the presence of an acid on the tooth surface. The acid appears to be generated on the surface of the tooth at the site of decay and is not in the saliva. Some bacteria growing on the tooth surfaces are capable of fermenting certain types of food taken into the mouth, thereby forming the acid. It is not necessary for the food remnants to remain on or between the teeth for this acid production to occur. This passage of a fermentable material through the mouth will permit the bacteria to generate the acid.

The general consensus is that the frequent or excessive use of sugar would favor the decaying process. We use a certain amount of sugar in our diet; however, the American youth consumes much more sugar than an optimum diet requires and much of it at times other than at meals. For proper nutrition and health we need a sufficient amount of a well-balanced diet three times a day. If the intake of sugar is limited strictly to meals, tooth decay will be reduced. It is the in-between-meal use of beverages, candy, gum, cookies, cakes, and the like which is so destructive to the teeth.

Soft drinks are approximately 10 per cent solutions of sugar. Studies have repeatedly shown that a few cubic centimeters of a 10 per cent solution of sugar held in the mouth for 1 min. are sufficient for the bacteria on the tooth surfaces to generate an acid which immediately removes some of the mineral salts from the enamel surface. Tooth decay is not a continuous process, but is intermittent in character. The process is activated every time we place a fermentable material in the mouth.

Many cola beverages and some types of hard candy contain a considerable amount of acid to say nothing of their sugar content. This acid is in itself detrimental to the tooth surfaces. McClure of the U. S. Public Health Service has shown that the removal of the mineral salts from the enamel of the teeth will occur in one week when the laboratory animals are given a cola beverage in place of water. Other laboratories have reported an increase in tooth decay when cola beverages are substituted for water.

The amount of sugar consumed in the bottled beverages (alcoholic and non-alcoholic), extracts, and sirups is appalling. In a report entitled, "The World's Sugar Situation," prepared by the Bureau of Agricultural Economics, Department of Agriculture, and published in August, 1946, it was estimated that 713,000 tons of sugar would be consumed in this manner during 1946. It also stated that the candy industry would consume 491,000 tons of sugar during the same period. These figures were based on official rationing levels.

Most of this material is consumed by the American youth between meals. This habit not only permits a period of carious activity, but it reduces a zest for food at the following meal. Many school lunchrooms tempt the student to use these forms of concentrated sugar by offering them for sale, thereby reducing the appetite for other forms of nutrients. School officials who permit the sale of candy, chocolate, beverages, gum, and the like are definitely contributing to the dental decay in their pupils.

The science of healthful living—that is, health education—must be taught not only by formal instruction in the classroom, but by precept as well. The dental profession cannot control this disease unaided. Dental caries is a public health problem and as such requires the cooperation of all school officials, parent teacher associations, civic clubs of all types, as well as all branches of hospital and clinical services.—*W. A. Blayney, director, Zoller Dental Clinic, University of Chicago Clinics.*

ALTERNATIVES TO THE USE OF CARBONATED BEVERAGES IN THE HOSPITAL DIET

When asked concerning the frequency and purpose of the use of carbonated beverages in the Children's Hospital, Cincinnati, my reply was, "We don't use them. In fact, no routine use whatsoever is made of them." There are a number of reasons for this policy.

Patients come to the hospital to regain health. The purpose of a feeding program is to contribute to the patient's recovery through a diet designed to provide optimum nutrition. It has been convincingly demonstrated that the rate of recovery, wound healing, and the patient's well being are closely related to an adequate food intake. With this in mind, an attempt has been made to build the entire feeding and nourishment program around the Recommended Dietary Allowances of the National Research Council. Furthermore, in many disease conditions the use of still higher levels of nutrient intake is advantageous. For example, a high-protein, high-ascorbic-acid intake has been found to be closely correlated with better wound healing, an increase in the speed of convalescence, and with the patient's well being.

On the other hand, there is an impairment or diminution of appetite generally occurring as a result of disease conditions and of imposed inactivity. This anorexia poses a challenging problem to the dietitian who is expected to provide an optimum food intake. Thus, a child in addition to three meals a day is given nourishment routinely at 10 a.m., 2:30 p.m., and 8 p.m.

The sick child probably will not take large servings at one time; thus to make certain that the ascorbic acid requirement is met, orange juice is always served as the morning between-meal nourishment. A similar problem may apply in the case of milk. If the equivalent of 32 oz. of milk is necessary to meet protein and other requirements, careful planning will be needed to incorporate this quantity of milk in the menu. Thus, afternoon or evening nourishment may be a milk drink.

If, instead of milk or fruit juice, a carbonated drink were served, it would become more difficult if not impossible to meet adequate levels of nutrient intake. Furthermore, the carbonated beverage decreases the appetite for foods which would have greater nutrient content, thus making it even more unlikely that the patient would be able to make up for the omission of nutritious drinks.

Sugar itself is usually considered a source of energy, and although it has a high satiety value and may be responsible for further impairment of the appetite, it is not usually completely prohibited. If sugar is to be used, there is a definite advantage in putting it in beverages or food products which have a high nutrient content, such as milk—as in milk shakes, malted milks, and ice cream—or in fruit juices rather than using it in carbonated beverages. There may also be an added contraindication to cola beverages, due to the caffeine content.

There is another aspect of hospital feeding that is sometimes neglected. If carbonated beverages are used in hospital practice, even if only for temporary use, many patients assume that they are "good for you." Hospital feeding practices are usually considered the acme of perfection as far as eating for health is concerned. The circumstances create an unusual opportunity both for teaching by example through high standards in food selection and palatability in the hospital menu and through teaching the patient how to improve his usual home diet. It is our plan not to encourage parents to bring any foods or beverages to the children while they are in the hospital. We emphasize the establishment of the proper food habits and believe that therein lies an opportunity to teach the child as well as the parent in the principles of good nutrition.

An occasional request is made by the mother for carbonated beverages while the child is in the hospital. It would be helpful to the dietitian if such requests could be evaluated by the physician and the use of such beverages be limited by prescription.

A psychological and social benefit is sometimes attributed to the use of carbonated drinks. The extent of this benefit will depend on the availability of adequate or superior substitutes for this purpose. Iced, sparkling, colorful fruit juices carry appetite appeal to most children and adults, and if available they are consumed with relish. The most urgent requests by the overseas soldiers reported to the Quartermaster General were for fruit juice and milk. As a result, improvements have already been made in the quality and availability of these supplies. The acceptance of milk shakes, malted milk, as well as milk, egg, and fruit juice mixtures is also general. The superior success of "milk bars" competing with bars serving carbonated drinks at high school social functions affirms the acceptability and even preference of children for these beverages if they are made available.

It would seem obvious, then, that the use of carbonated beverages in the hospital is unnecessary—or at least that their use can be made the exception rather than the rule. The alert dietitian will be able to find adequate or superior substitutes for both the normal and therapeutic diet. Adult feeding presents many of the same problems cited in relation to child feeding, and the problems can be solved in the same way.—*Eva N. Ylvisaker, chief, Dietary Department, Children's Hospital, Cincinnati.*

Army Announcements Concerning Personnel

Miriam L. Price was appointed a Medical Department Dietitian during April, 1947. She is a graduate of Purdue University, and received her dietetic intern training at Walter Reed General Hospital, Washington.

The following Medical Department Dietitians were promoted during April, 1947:

Second Lieutenant to First Lieutenant

Bowdish, Jeanne R., R-2226
Church, Doris, B., R-2439
Errico, Leonora R., R-2234
Gasson, Frances M., R-2370
Goodwin, Marjorie, R-2400
Hill, Edith A., R-2406
Hultquist, Bernice E., R-2413
Koskela, Violet S., R-2230
Lehman, Margaret E., R-2455
Middlesworth, Naomi F., R-2374
Molenaar, Margaret I., R-2393
Nye, Beulah E., R-2409
Pabst, Marjorie A., R-2433
Paradise, Ann E., R-2434
Parsons, Jean, R-2356
Petersen, Elna, C., R-2357
Smith, Charlotte E., R-2329

Listed below are the names of Medical Department Dietitians (not previously announced) who have been separated from service:

Captain

Morlan, Una, R-33, Courtland, Kans.

First Lieutenants

Breunig, Doris J., R-2335, 8 Fifth St., Galeton, Pa.
Naylor, Anita E., R-2213, 4326—12th, N.E., Apt. 5, Seattle, Wash.
Rea, Betty C., R-2311, 440 Virginia Ave., Baden, Pa.
Reynolds, Barbara K., R-2308, 615 Fellsway, Medford, Mass.
Schmoe, Eugenie E., R-2195, R.R. # 1, Edinburg, Ind.
Zaladonis, Irene F., R-2264, 2615—17th St., N E., Washington 18, D. C.

Second Lieutenants

Balentine, Caroline E., R-2258, 241 W. St. Joseph St., Easton, Pa.
Liebman, Selma, R-2479, 1532 Ocean Ave., Brooklyn 30, N. Y.
McMahon, Alma P., R-2246, 1614—47th St., Des Moines, Iowa
Sheehe, Mary M., R-2297, 3216 Wrightsboro Rd., Augusta, Ga.
St. John, Nettie L., R-2328, 25 Seaview Ave., E., Norwalk, Conn.
Wright, Helen C., R-2309, Careyland Dairy Farm, R. # 9, Aurora, Colo.

The following Medical Department Dietitians, previously reported as separated from the service, have been recalled to active duty:

Capt. Evelyn M. Girard, R-370
1st Lt. Doris M. Allison, R-1161
1st Lt. Dorothy M. MacRae, R-919

New Appointments, Veterans Administration

The following hospital appointments of dietitians (not previously announced) have been made by the Veterans Administration.

Name	Position	Location
	Branch No. 7	
Audrey Beyer	Staff Dietitian	Wood, Wis.
Marguerite Rossman	Staff Dietitian	Wood, Wis.
Ruth T. Schmitz	Staff Dietitian	Hines, Ill.
	Branch No. 8	
Gwendolyn Hendriks	Staff Dietitian	Lincoln, Neb.
Virginia Rae Wildung	Staff Dietitian	Minneapolis, Minn.
	Branch No. 9	
Nelda Rose Pearson	Staff Dietitian	Oklahoma City, Okla.
	Branch No. 10	
Mary Grace Banks	Staff Dietitian	Temple, Tex.
Mary G. Ogden	Staff Dietitian	Legion, Tex.
Mary M. Pate	Head Dietitian	Amarillo, Tex.
	Branch No. 11	
Elizabeth Mae Steig	Staff Dietitian	Barnes Annex, Portland, Ore.
	Branch No. 12	
Alice Sarah Harper	Staff Dietitian	Phoenix, Ariz.
Mildred E. Stevens	Staff Dietitian	Livermore, Calif.
Virginia R. Parr	Staff Dietitian	San Fernando, Calif.

Sterilizing and Preserving Food in the Raw State

Although no convenient method of preserving foodstuffs in the raw state exists today, scientists have been working on the problem. An apparatus called the "Capacitron" has been developed. Ultrashort electrical impulses are converted into correspondingly short bursts of electrons, being released during a time period of about 1/1,000,000 of a second. When such bursts are applied to raw foods, sterilization can be achieved. Lean beef, poultry, and eggs in the series of the protein foods, and green peas, mushrooms, and tomatoes of the vegetable group give the most satisfactory results. In general, milk products are highly susceptible to changes in taste. Despite the fact that these studies are still in the experimental stage, it is apparent that increased preservation time of foodstuffs is possible. There is no doubt that the "Capacitron" will be found useful in developing further the possibilities of preserving raw foods. *From "Ultrashort Application Time of Penetrating Electrons" by Arno Brasch and Wolfgang Huber.* Science *105: 112 (January 31), 1947.*

Current Comment

THE DIET OF VETERANS' FAMILIES LIVING IN A TRAILER CAMP[1]

CHLOE ANNE YATES AND RUTH L. PIKE

The Pennsylvania State College

This study was undertaken to determine the nutritional adequacy and cost of the diets of a group of veterans' families, all living on fixed incomes in a trailer community at The Pennsylvania State College. A secondary purpose was to compare the influence of previous college training in nutrition upon the adequacy and cost of the diets.

Sixteen families participated in this study. Seven of the wives had received a year or more of nutrition training while in college. This group was designated as Group I. The other nine had no training and constituted Group II. The study was planned to determine whether families living on minimum fixed incomes with uniform rent payments could achieve adequate diets under present day conditions of food shortages and high market costs. Conditions of the study were fairly well standardized since:

(a) All families consisted of either two or three members.

(b) Limited storage space in all cases necessitated frequent, small quantity buying.

(c) Conditions of age, sex, and activity were relatively uniform.

(d) All meals were eaten at home.

The families kept accurate records of the cost and amount of food consumed over a seven-day period in November, 1946. The nutritive values of these foods were later calculated and compared with the National Research Council's revised recommended dietary allowances (1) for moderately active individuals.

An inventory of the food on hand at the beginning of the study was made by the investigators in each home, and the cooperating families were given food purchase forms for the seven-day period. On the seventh day a second inventory was made of all foods remaining in the home. It was assumed that a minimum of record-keeping would elicit better cooperation, and therefore, the homemakers were not asked to submit menus and recipes.

At the end of the week the records were collected and the food consumption for the individual families was compiled. In families with older children who received the regular family diet, all foods were calculated as a family unit, and it was assumed that each member received his respective share of the food. In those families with infants too young to share the family meals, the cost of the infant's food was calculated as part of the family cost, but the nutritive values were not calculated.

The nutritive values were calculated on a weekly basis, using several tables of food composition (2–5).

RESULTS AND DISCUSSION

In Table 1 are presented the range and average costs of the weekly dietaries of all families studied. The same information for those families whose diets were classified as adequate is shown in Table 2. A comparison of the nutritive values received with the recommended allowances is made in Table 3.

The weekly diets of all the families ranged in cost

TABLE 1

Cost of food for one week for sixteen families living in a trailer camp

FAMILY	NUMBER IN FAMILY	TOTAL COST PER FAMILY	AVERAGE COST PER PERSON
Group I			
1	2	$14.41	$7.21
2	2	13.13	6.57
3	2	17.15	8.57
4	3	14.79	4.93
5	3	8.71	2.90
6	2	13.55	6.78
7	3	13.92	4.64
Average.....		13.67	5.63
Group II			
8	3	17.09	5.70
9	3	12.99	4.33
10	3	13.85	4.62
11	2	17.55	8.77
12	2	11.70	5.85
13	3	15.03	5.01
14	3	13.73	4.58
15	2	10.55	5.27
16	2	10.19	5.11
Average.....		13.63	5.33

[1] Received for publication March 21, 1947.

from $8.71 (family of three) to $17.55 (family of two). The mean cost was $13.65. It is interesting to note that the mean, or average, cost of each group varied only 2 cents from the total mean. The average per capita cost, however, varied from $5.63 (Group I) to $5.33 (Group II).

The cost of family diets classified as adequate varied from $13.13 to $17.55, with an average of $15.38. The average for Group I was $14.68, or $6.11 per person, and for Group II, $16.56, or $6.21.

TABLE 2

Cost of food for one week for eight families which received adequate diets

FAMILY	NUMBER IN FAMILY	TOTAL COST PER FAMILY	AVERAGE COST PER PERSON
Group I			
1	2	$14.41	$7.21
2	2	13.13	6.57
3	2	17.15	8.57
4	3	14.79	4.93
7	3	13.92	4.64
Average.....		14.68	6.11
Group II			
8	3	17.09	5.70
11	2	17.55	8.77
13	3	15.03	5.01
Average.....		16.56	6.21

The most frequent deficit in intake, as revealed in Table 3, was in calcium. This occurred in two families in Group I and in four families in Group II. Associated riboflavin deficits occurred in two families in each group. Two families in each group were low in calories, but these deficits were negligible.[2] Protein, iron, and niacin were each low in one case in Group I, whereas the recommendations were met adequately by Group II. Thiamine was lower in one dietary in each group than the recommended allowances, and two families in Group II showed vitamin A deficits. The high figures for ascorbic acid in each group are interesting, but the actual consumption figure was probably much lower due to loss during food preparation.

There were eight instances in Group I as compared with eleven in Group II where intake was lower than the recommended intake. (Two per cent deficits in three cases were regarded as insignificant.)

Of the families in Group I, 71 per cent received adequate diets, while only 33 per cent in Group II consumed food which met the National Research Council's recommendations.

CONCLUSIONS

These findings indicate that the nutrition training received by the wives in college had a definite in-

[2] Since caloric deficits totaling 10 per cent in Family 6 and 13 per cent in Family 7 in Group I were probably the result of a conscious effort at weight reduction, these items were considered adequate. The dietary of Family 7, therefore, was calculated as adequate in all respects.

TABLE 3

Percentage of nutrients in dietaries of sixteen trailer coach families as compared to recommended allowances of the National Research Council

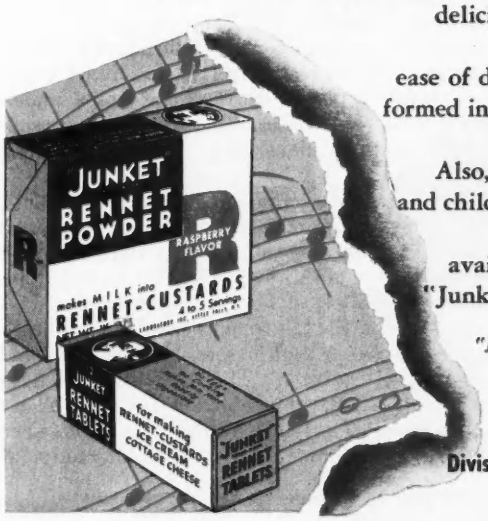
FAMILY	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
	%*	%*	%*	%*	%*	%*	%*	%*	%*
Group I									
1**	129	156	162	193	409	141	180	172	171
2**	120	149	168	133	153	144	140	124	212
3**	114	169	164	163	364	149	139	139	272
4**	108	166	205	179	435	127	211	162	161
5	106	84	73	64	258	69	76	85	118
6	90	127	89	125	104	117	95	153	165
7**	87	121	108	122	422	165	135	128	255
Group II									
8**	127	179	213	180	421	170	178	140	366
9	111	119	89	137	156	168	92	123	287
10	106	133	75	125	203	125	161	152	251
11**	106	162	175	155	122	180	155	184	505
12	104	140	79	158	321	116	103	103	192
13**	98	140	189	128	457	123	149	116	143
14	98	118	71	134	356	107	144	177	191
15	96	133	124	107	86	109	100	148	147
16	89	126	100	119	65	98	90	137	270

* Of National Research Council's Recommended Dietary Allowance.

** Adequate diets.

ON THE THEME OF MILK

When the basic dietary theme of milk no longer strikes a responsive chord in children or adults—because of aversion or intolerance—the resourceful "composer" may happily resort to a number of variations . . . by changing the consistency and flavor of milk with either "Junket" Rennet Powder or Tablets, to insure an adequate intake of this essential nutrient. • With quickened appeal to retina and taste-buds, deliciously tempting rennet-custards maintain all the nutritional values of milk—yet surpass it in ease of digestibility because of the smaller, softer curds formed in the stomach by the enzymatic action of rennin. • Let us send full details and trial packages. Also, samples of authoritative, time-saving infants' and children's diets—for physicians "personalized" with our compliments. • "Junket" Rennet Powder available in six popular flavors, already sweetened; "Junket" Rennet Tablets—not sweetened or flavored.



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fluence on the nutritive values of the dietaries they served to their families. Five families out of seven in Group I received adequate diets, while only three families out of nine in Group II achieved this goal.

This factor (training), however, did not seem to influence the expenditures on food. The cost per person for food in Group I was only 1 per cent less than that in Group II. Although the market conditions and costs at State College were more or less uniform and permitted limited choice, it was apparent that the homemakers in Group I consistently made wise choices from the available foods. The limited amount of storage space in the trailers, necessitating daily or almost daily purchasing, undoubtedly increased the food costs in both groups.

It would appear from this study that an adequate diet could be obtained for about $6 per person per week, even during this period of inflated food costs. It seems also that by the exclusion of relatively expensive food and luxury items, even this amount might be reduced without sacrificing nutritional adequacy.

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FOOD WASTE IN RELATION TO WEIGHT "AS PURCHASED" VS. "EDIBLE PORTION"[1]

FRANCES WELCH, REUELINE HIBLER,[2] AND JOY WILSON[2]

School of Home Economics, North Texas State College, Denton

There has been much interest in the past few years in the amount of food waste in relation to the "As Purchased" (A.P.) and "Edible Portion" E.P.) weights. A review of printed material reveals that very little work of this nature has been done with the exception of the Department of Agriculture's report in 1945 (1).

The purpose of this study was to show the average percentage of loss in foods purchased wholesale for quantity use during the summer and fall in Denton, Texas, and to compare this percentage with that of the above mentioned report.

[1] Received for publication April 11, 1947.

[2] Students in a special problems course.

PROCEDURE

This study was made in the summer, from June 15 to July 5, 1946, and in the fall, from November 1, 1946, to January 10, 1947. The four samples used each day were taken from the amount received at one of the college dormitories. All samples weighed on the same day were taken from one purchase lot—that is, four heads of cabbage from the same crate, and so on. Family-size scales were used in obtaining the weights. As far as possible, 16 oz. of the food A.P. were used for each sample, the exceptions being bunches of beets and celery and heads of lettuce and cabbage. Four different samples were weighed on each of three days when the food was prepared, making a total of twelve samples of each food. Eleven vegetables and three fruits were used in this study. After samples were prepared for cooking, they were weighed again to obtain the E.P. The difference in weights between A.P. and E.P. determined the weight loss for each food. The actual waste was also weighed as a check against errors.

The average A.P. and E.P. weights of Samples 1, 2, 3, and 4 for each of the three days were calculated. The average weight loss of each sample was then determined. From these data the average percentage of loss on all samples was obtained by dividing the average weight loss by the average A.P. weight.

RESULTS AND DISCUSSION

The foods are classified in relation to their percentage of loss in Table 1. It will be observed that the waste in weight or percentage of loss in the fall was greater for all foods studied with the exception of squash, carrots, potatoes, apples, and celery.

The foods studied were divided into groups according to the amount of waste. Group I contained those having 10 per cent or less loss; Group II, 10 to 15 per cent loss; and Group III, over 15 per cent loss. The foods with 10 per cent loss or less were squash, onions, and green beans. Their losses were 7, 8, and 10 per cent for summer, and during the fall 4, 10, and 10 per cent respectively. The Department of Agriculture report, likewise, gave losses under 10 per cent for these vegetables— 3 per cent for squash, 6 per cent for onions, and 10 per cent for green beans.

The foods weighed in both summer and fall which showed a loss between 10 and 15 per cent included tomatoes, potatoes, and carrots, which closely conformed to the government report. In the summer, spinach had a loss of 14 per cent and cabbage 13 per cent, while in the fall spinach had a 30 per cent and cabbage a 23 per cent loss, an increase of 16 and 10 per cent, respectively. The Department of Agriculture's report gave an average of 18 per cent loss for spinach and 27 per cent for cabbage. This average for spinach is lower than the present study, while

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TABLE 1

A.P. and E.P. weight of fourteen common foods and percentage of waste

FOOD	AVERAGE WEIGHT A.P.		AVERAGE WEIGHT E.P.		AVERAGE WEIGHT LOSS				LOSS ACCORDING TO DEPARTMENT OF AGRICULTURE REPORT (1)
	In summer	In fall	In summer	In fall	In summer		In fall		
	oz.	*oz.*	*oz.*	*oz.*	*oz.*	*%*	*oz.*	*%*	*%*
Squash	16	16	14.93	15.28	1.16	7.25	0.69	4.31	3
Onions	16	16	14.79	14.42	1.20	7.50	1.58	9.87	6
Green beans	16	16	14.47	14.37	1.57	9.82	1.62	10.12	10
Carrots	16	16	14.50	13.77	2.00	12.50	1.98	12.37	12
Cabbage	20.38	27.29	15.33	21.07	2.59	12.58	6.22	22.71	27
Tomatoes	16	16	13.96	13.69	2.04	12.75	2.30	14.37	12
Spinach	16	16	13.99	11.22	2.17	13.56	4.75	29.68	18
Potatoes peeled by hand	16	16	13.70	13.88	2.37	14.81	2.11	13.90	16
Potatoes peeled by machine	16	16	13.88	14.00	2.12	13.18	2.00	12.50	
Head lettuce	18.41	14.94	14.66	10.89	3.75	20.36	4.04	27.04	31
Apples	16	16	11.83	12.86	4.25	26.56	3.10	19.37	12
Okra	16		11.33		4.58	28.62			12
Cantaloupe	30.66		21.75		8.91	29.02			53
Celery	22.29	32.50	14.41	23.58	7.87	35.30	8.66	26.64	37
Beets	17.86	29.33	10.57	11.50	7.08	40.04	17.83	60.79	25

that for cabbage is much higher. Cabbage, according to the present study, needs special mention since the percentage of loss was found to be inversely proportional to the size of the head in both the summer and fall samplings.

The foods for which more than 15 per cent loss occurred were: lettuce, beets, celery, cantaloupes, okra, and apples. Lettuce was found to vary with the size of the head, as did the cabbage mentioned above, but at least a 15 per cent loss was obtained for all weighings.

Beets showed the greatest variation in our study with an average loss of 40 per cent in the summer and 60 per cent in the fall, whereas the government report gave a loss of only 25 per cent. The latter study calculated loss by including as waste the skins, root ends, and base of stems, while this study considered only stems and leaves as waste. In the present study skins were not removed prior to cooking since it was desired to cook them in their skins. Unless the leaves are to be used separately, they represent waste in the average kitchen and were so considered. The smaller the bunch of beets, the greater was the loss.

The average percentage of loss in all of the celery samples was 35 per cent in the summer and 27 per cent in the fall. The larger the bunch of celery, the greater was the loss. Apples and okra showed relatively high losses, but apples had a lower loss in the fall than in the summer. An early fall freeze prevented fall weighing of cantaloupes and okra.

The difference in waste from machine- and hand-peeling of potatoes was very slight, 1 per cent loss in the fall and 2 per cent in the summer in favor of hand-peeling. The average weight loss on all samples peeled by hand was 15 per cent in the summer and 14 per cent in the fall, while those peeled by machine lost 13 per cent both in the summer and in the fall.

SUMMARY

The percentage of loss in weight of all food was greater in the fall with the exception of squash, carrots, potatoes, apples, and celery.

Squash showed the least weight loss in the summer and in the fall, although onions, beans, carrots, and tomatoes also showed a small loss. The greatest waste occurred in the smallest heads of cabbage and lettuce, while celery in large bunches and the largest cantaloupes showed the greatest loss. Potatoes peeled by hand and by machine showed little or no difference in loss. Beets gave the greatest loss, part of which could be due to the difference in definition of the portions to be called waste.

REFERENCE

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THE FUTURE OF DRIED EGGS

T. SWANN HARDING

Dried eggs are a subject regarding which many former members of the armed forces feel strongly. They look back upon their consumption of this food product as one of the major hardships of their military career. They will probably find it difficult to believe that a successful dried egg industry may develop and that its product will be both edible and minus the unsavory aroma they associate with it.

If that industry is founded, it will be due largely to scientists in the Western Regional Research Laboratory of the Department of Agriculture at Albany, California, who developed the technology of food

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Hemo compared with minimum daily adult requirements.*

	Minimum daily adult requirements	Two servings** of Hemo and 16 fluid ounces of milk (2 glasses)	Two servings** of Hemo
Vitamin A	4000 U.S.P. units	4900	4000
Vitamin B_1	333 U.S.P. units	400	333
Vitamin B_2	2 milligrams	3	2
Vitamin D	400 U.S.P. units	410	400
Niacin amide	Not yet established	10.3 mg.	10 mg.
Iron	10 milligrams	15.7	14.7
Calcium	750 milligrams	950	376
Phosphorus	750 milligrams	750	288

* As set by Federal Security Administrator under authority of the Federal Food, Drug and Cosmetic Act. (Hemo does not contain Vitamin C.)

** Two servings equal four teaspoonfuls Hemo—1.33 oz. Powder Hemo or 1.86 oz. Liquid Hemo.

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dehydration during the war. So delicate are the instruments at the disposal of this well trained staff that they can be used to detect the exact moment when dried egg powder "makes up its mind to go bad." Thus the dried eggs can be salvaged.

The dried eggs of the wartime period were not always fresh at the start, and the powder was not nurtured as tenderly as it should have been. Many people, cooks included, regard dehydrated food as inert material which will stand any amount of abuse. This is not true, especially as it applies to dried eggs. The dried eggs spoiled mainly because certain phosphatic fat-like substances and certain true fats in them developed "off-flavors."

Also, a brown substance formed in the eggs during storage, injures the appearance of the product. It has been found, however, that the normal appearance can be preserved by reducing the moisture content below 2 per cent. Furthermore, if this superdried powder is packaged in a low-oxygen gas, such as carbon dioxide, nitrogen, or a mixture of the two, and the egg mixture is slightly acidified before drying, the shelf life of high grade egg powders is lengthened.

That is only one of the problems with which the Western Laboratory has been dealing. For the past few years the laboratory's work on food dehydration has been so outstanding that it has overshadowed its other projects. It is, however, equipped with the most delicate pieces of apparatus to enable the workers to discover what is going on within the very cells of food products as they are processed and to detect quantitatively one part in a hundred million of many substances present in only the minutest traces.

On the other hand the laboratory has vast space within which full-scale pilot plants can be operated and the results of the test tube translated into practical manufacturing techniques. Just now it is turning to the frozen food field and hopes to do for this industry what it did for the dehydrated food industry during the war. For the latter it not only worked out methods and technology, but developed blueprints for plants of all sizes with all varieties of equipment. These were made available to the trade.

Dehydrated foods doubtless have a future even in the postwar era. The better the foods, the brighter will be their future. Projects continue at the Western Laboratory on eggs, potatoes, onions, carrots, cabbage, beets, and rutabagas. Dehydrated onions already have a place in the pickle industry. Dehydrated mashed potatoes which can be stirred into hot water are a possibility.

The whole problem is to improve the quality and longevity in storage of dehydrated foods. Often a constituent present in very minute quantity causes trouble. Hence, the scientists determine quantitatively the amount.

The surfaces of minute particles of dried foods are examined closely to see whether they are smooth or rough, for that factor can make a difference. The scientists must know not only how much water is present, but in what form and whether it is locked in the cells. The very cells of the vegetables are torn apart and pried into. Such tests are vital in tracing incipient deterioration and minute changes in constituents, thus making it possible to deal with spoilage before it occurs.

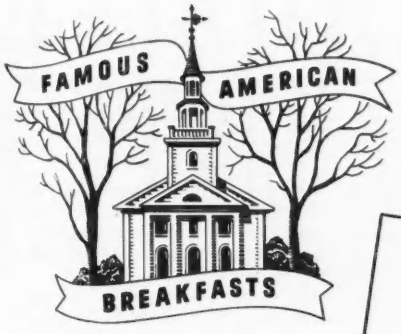
Extensive experiments are also showing how the natural flavor and color may be retained in dehydrated vegetables. These, and the nutritive qualities as well, can be preserved under extreme heat conditions, involving temperatures of 90° to 120°F. Storage life is nearly always improved by reducing the water content below former levels. That of dehydrated potatoes has been doubled by reducing moisture content from 7 to 5 per cent. By further reducing the moisture to 2 per cent at 120°F. and using calcium oxide to absorb moisture in the package, the storage life of the product can be increased sixfold.

This laboratory has also done much with the freezing preservation of fruits. Pies made from quick-frozen fruit are as flavorful as those prepared from fresh fruit. Frozen fruit purée preserves the color, flavor, and nutritive properties of the fresh fruit, and can be made from any fully ripe, raw fruit. Low grade, off-size, even blemished fruit can be used, provided it is internally sound and full flavored. These purées serve as the bases for ice cream, sherbet, ices, beverages, and jam.

The laboratory has also made a new variant of pectin, called low-methyl ester pectin, from orange peels. Pilot plant tests show that it can be produced cheaply and it can be used in making a powder which, when dissolved in hot water, "sets" like a gelatin, but without refrigeration. This property made it an excellent food item for the armed forces in hot countries and will hereafter please the housewife. The pectin variant is also used in preparing a cold-water pudding mix which forms a smooth paste after a little stirring and then gels in 3 or 4 min.

Finally, a low-sugar jellied fruit dessert or salad has been prepared (60 per cent fruit and 40 per cent sugar sirup) by heating prepared fruit, sugar sirup, and low-methyl ester pectin to a sterilization temperature, and then packing it in airtight cans. It is of superior quality, stores well, is easy to manufacture, and the fresh fruit flavor is well preserved. The product proved valuable to the Army during the war and faces a bright peacetime future now.

The immediate future looks to frozen foods, however, and experiments have already been undertaken in dehydrofreezing. The product is first dehydrated to shrink its weight and volume and is then frozen. In time it is anticipated that a technology of food freezing will be developed in this laboratory, and as a result the plans and specifications for plants will be made available to the trade.

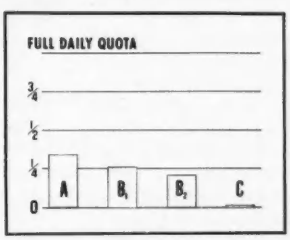


New England Breakfast
Fresh California Orange Juice
Codfish Cakes and Bacon
Baked Beans Boston Brown Bread
Wild Plum Jam Coffee

The most interesting thing about these traditional breakfasts is that, hearty as they are, *without orange juice* each one falls short in vitamin C! So short, that almost *none* is supplied. Yet C is the very vitamin health authorities say we should get at breakfast. The simple addition of fresh California orange juice fills that need *abundantly* in any breakfast—as the charts show.

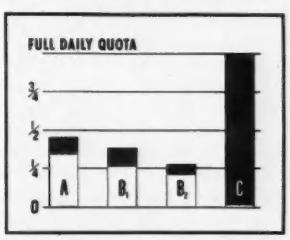
SEE HOW MUCH HEALTH ORANGE JUICE ADDS!

Without fresh California orange juice, breakfast supplies this much of the day's vitamin needs:



Here are the vitamins given by an average good American breakfast* *without orange juice.* It falls short in vitamin C. Few foods are a good source of this important vitamin. Yet C is needed every day to fight fatigue and infection, protect teeth and gums, and keep feeling young.

With fresh California orange juice, breakfast supplies this much of the day's vitamin needs:



Oranges are the richest everyday source of vitamin C. A big glass of juice fills the day's need and boosts other food values, too. That's why, big or little, all good American breakfasts start with fresh California orange juice. And what could be a brighter, more delicious send-off!

**cereal with milk, egg, toast and coffee*

California **Sunkist** *Oranges*

BEST FOR JUICE—*and Every use!*

Book Reviews

Industrial Feeding Facilities. Washington: War Food Administration, 1946. Paper, looseleaf. Pages unnumbered. Apply.

In the foreword of this manual, Robert S. Goodhart, Surgeon (R), U. S. Public Health Service, states: "The primary objective of any industrial feeding program should be to protect and improve the nutritional status, and, therefore, the health of workers. This manual has been prepared to assist in reaching that objective."

The material included was developed by Erwin G. Adelberger, Ivon H. Blackman, Jr., and Ruth M. Lusby of the Civilian Food Requirements Branch, Office of Distribution, War Food Administration, and is a compilation of concise information to be used in planning, and will prove very beneficial to anyone contemplating new construction or alteration of an industrial cafeteria or large feeding establishment. It is divided into several parts. Part I covers the technical considerations in the selection of facilities and includes a well-thought-out chart titled "Basic Factors Governing Selection and Designing of Industrial Feeding Facilities." Part II is devoted to layout, design, and construction, and is divided into sections, each covering a particular topic. Basic planning principles are presented and illustrated throughout with design charts, standard layouts, and equipment lists. There is also a discussion of the logical flow of production. Part III is a dictionary of technical terms. Other parts cover estimated equipment requirements for a commissary, a central kitchen, an industrial cafeteria, and other types of industrial feeding service.—*Clarice D. Gullickson, chief, Dietetic Administration Section, Veterans Administration, Washington, D. C.*

Allergy in Theory and Practice. By Robert A. Cooke, M.D. Philadelphia: W. B. Saunders Company, 1947. Cloth. Pp. 572. Price $8.

This book, which is the outcome of a cooperative venture in post-graduate teaching, is directed to the medical profession. Believing that a need for more education in allergy exists, the author has compiled the facts on the subject and has presented both the practical and theoretical instruction as he and his associates give it. Included with the discussion of each phase of the subject is a complete list of references.

Dietary management is stressed when it is known to be a factor contributing to the successful treatment of an allergy. However, the author points out that "too many patients are at large on diets reduced below normal for adequate nutrition on the basis of unconfirmed and equivocal skin tests or on a restricted diet that was intended merely as a trial." Emphasis is continually placed on the importance of avoiding undernutrition.

Hows and Whys of Cooking. By Evelyn G. Halliday and Isabel T. Noble. 3rd revised ed. Chicago: University of Chicago Press, 1946. Cloth. Pp. 328. Price $3.50.

Both the "hows" and "whys" have been revised in accord with recent experimental work and newer methods of cooking. In addition, new recipes, over thirty-six new illustrations, ten of which explain a new process for making successful pie crust, instructions for the use of pressure saucepans, and a chapter about the inspection, grading, and preparation of beef have been included.

Since 1928 this book has filled a need for scientific explanations of cooking successes and failures. To insure successful results, the proportions of ingredients are given in both weights and measures; the ingredients are precisely described even to the variety and brand of flour and baking powder; manipulation or method of combining ingredients is described clearly; the use of measuring cups, thermometers, scales, pans, and other equipment is pictured; and points on exact temperatures and times for cooking are given.

The Child from Five to Ten. By Arnold Gesell, M.D., and Frances L. Ilg, M.D., in collaboration with Louise Bates Ames, Ph.D., and Glenna E. Bullis. 4th ed. New York: Harper & Brothers, 1946. Cloth. Pp. 475. Price $4.

Dr. Gesell is now celebrating his thirty-fifth year as head of Yale University's famous Clinic of Child Development. However, as early as 1919, he had already started a comprehensive study of the behavior of normal children.

Those readers who are familiar with his previous publication, *Infant and Child in the Culture of Today*, will welcome this companion volume. In fact, this new volume presents follow-up observations on the same children from five to ten years of age who were the subjects of previous reports concerning their development from infancy to five years of age. Fifty or more children were examined at five, five and a half, six, seven, eight, and nine years, and a smaller number at ten years. Most of these children were of high average or superior intelligence and came from homes of good or high socio-economic status.

The information is organized into a series of "psychological portraits" with concrete guidance suggestions. The book is divided into three parts: "Growth"; "The Growing Child," with a chapter devoted to each age; and "The Growth Complex." While the entire book will be of interest and value to the dietitian and nutritionist in understanding and meeting the needs of her infant and child patients, the sections in each chapter of Part II which deal with "Personal Hygiene" will be of particular interest. Under this category, the pattern of eating behavior, appetite, refusals and preferences for food, self-help in feeding, and table behavior are described for each year's development.

The remainder of the book will also be of help in understanding normal development in the following behavior areas: "Motor Characteristics," "Emotional Expression," "Fears and Dreams," "Self and Sex," "Interpersonal Relations," "Play and Pastimes," "School Life," "Ethical Sense," and "Philosophic Outlook."

Dietitians and nutritionists will welcome this book for its series of pertinent observations and suggestions for

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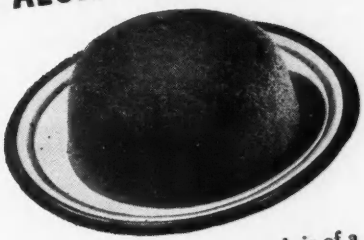
Wear-Ever Aluminum spreads heat so quickly, so evenly, that even a tiny candle flame is sufficient to bake a cake. With ALL Wear-Ever aluminum equipment, the *whole utensil cooks the food*, not just the bottom.



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guidance. While considerable attention has been given to physiological needs by many professional workers, too little has been understood and studied concerning the child's developmental pattern and the need for adaptation and elasticity in feeding and teaching programs to meet the *total* needs of the child.

Food and Fun for Daughter and Son. By Lila W. Erminger and Marjorie R. Hopkins. Chicago: Illinois Children's Home and Aid Society, 1947. (Distributed by Rand McNally & Company), Cloth. Pp. 120. Price $2.50.

This book is neither a cook book nor a book on child care—it is an interesting hybrid, giving information about children's food interests, recipes, menus, and handy "hints," yet does not deal with the subject of basic behavior. Some sixty-four recipes are given, which the authors feel from experience (they are both grandmothers) are especially suitable for children. All tend to be bland in nature. Fifty-five of the book's 120 pages are taken up with menus for "Big, Middle-Size, and Little" suppers, and box lunches.

Among the helpful hints are a rest and sleep schedule for children at various ages, suggestions for children's party menus and games, diversions for an only or lonely child, counterpane pastimes for the child who is ill in bed, and amusements for the chronically ill child.

The book is beautifully designed and printed in two colors throughout, and the artist has done much to make it attractive and readable. It would seem, however, that the space devoted to menus is somewhat out of proportion to its usefulness. It is possible that some housewives like ready-planned menus, but such made-to-order menus cannot take into consideration supplies and leftovers on hand or the children's preferences. It seems a little impractical, too, to cook separate meals for a child, as these menus imply, for the child must eat as a part of the family group. Such special menus would necessitate at least occasional double planning and cooking, since it would be hard to use a number of the suggested menus as the basis around which a family meal could be planned.

On the other hand, some of the recipes and suggestions should prove most useful in appealing to the child's appetite. For instance, recipes are given for peppermint milk (which is pink), Christmas tree delight, ice cream clowns, Cinderella sponge cake, and other dishes with similarly imaginative names. The entertainment suggestions and the pastimes for sick children are intriguing and usable, and although many of the hints are fairly obvious, many are the "things one just doesn't think about" when actually confronted with a situation.

The dietary information and menus were approved by such well-known medical persons and nutritionists as Dr. Margaret Gerard, Dr. John A. Bigler, Dorothy Beach, Edna Mohr, and Thelma Porter. Nutritionists will welcome this book for, despite its shortcomings, it is a reliable publication to which mothers desiring new and colorful ideas, as well as sound nutritional information, can be referred.

Group Feeding. By Clifford Allen Kaiser. New York: McGraw-Hill Book Company, 1946. Cloth. Pp. 490. Price $5.

This book might prove helpful to cooks or other individuals desiring general information regarding foods and food production. Helpful suggestions for menu planning have been included, and recipes are varied to appear quite complete. However, professional personnel with scientific knowledge of food and interest in the application of principles of cookery would find little of value, even as reference material.—*Clarice D. Gullickson, chief, Dietetic Administration Section, Veterans Administration, Washington, D. C.*

Looking at Ourselves Objectively[1] . . . . . .

1. How are your public relations?
2. Do you build professional good will?
3. Do you apply the newer principles of nutrition and diet therapy in your practice and teaching?
4. Recognizing that the quality of the food and the way it is served are the criteria by which a dietitian is judged, what is your rating?
5. Are you a smart merchandiser?
6. Do you practice art as well as science and good nutrition in menu planning, buying, food preparation, and service?
7. Do you observe up-to-date sanitation requirements for public health?
8. Do you participate in civic affairs?
9. Do you extend your professional influence by taking part in the activities of allied organizations?
10. Are you a good advertisement for your profession?

[1] This questionnaire, developed by the Public Relations Committee of the American Dietetic Association, was designed to serve as a check list which members of the Association may use in evaluating their own activities.

HARD to describe, but easy to enjoy . . . that's the velvet blend you get in drinks made with Carnation Evaporated Milk, which is heat-refined and homogenized to super-creamy smoothness! Carnation's wonderful in cream sauces, too, and in frozen desserts. . . . Try these summer drinks—then send for Carnation's "Velvet Blend Book," for more. If you'd also like quantity recipes (serving 50) for the beverages below, please mention them when you write. . . . *Carnation Company, Dept. 755-C, Milwaukee 2, Wis.*

ORANGE-BLOSSOM CREAM

2 cups sweetened orange juice, chilled
½ cup ice water or chipped ice
1 tall can Carnation Milk, chilled

Add orange juice and water or ice to Carnation Milk and beat or shake vigorously. Serves 6.

PINEAPPLE EGGNOG

4 eggs
6 tablespoons sugar
1½ cups Carnation Milk, diluted with 1½ cups water
1½ cups pineapple juice

Separate eggs. Beat egg yolks, add sugar and diluted Carnation Milk. Fold in stiffly beaten egg whites. Add pineapple juice and mix well. Serves 6.

"From Contented Cows"

An Invitation from Carnation . . . to visit the Carnation Exhibit at the St. Louis Convention, June 23 to 26.

Current Literature

Contributed by Janette C. Carlsen, Janet E. Engebretsen, and Ethel M. Miller, Dietary Department, The Johns Hopkins Hospital; Lorraine G. Weng and Marian T. Straube, University of Chicago Clinics; Mrs. Marjorie M. McKinley, Women's Educational and Industrial Union, Boston; and the Journal staff.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 14, February, 1947

*Some effects of high lipid diets on intestinal elimination. H. L. Wikoff, B. H. Marks, J. F. Caul, and W. F. Hoffman.—p. 58.

*The formation of concentrations of aluminum salts of fatty acids after the use of aluminum hydroxide. G. P. Child, W. K. Hall, and S. H. Auerbach.—p. 63.

Effects of High Lipid Diets on Intestinal Elimination. The type of fat as well as the concentration of fat has an effect on intestinal elimination in dogs. Diarrhea resulted from the feedings of diets containing caprylic, caproic, or butyric acids or the glycerides of these acids. Constipation followed feedings of stearic acid or tristearin. These effects cannot be attributed to the presence of large amounts of free fatty acids or soaps of fatty acids in the feces, as the low acid numbers of the total lipid or neutral ether extracts exclude the possibility of large amounts of free acid. Low acid numbers of the soap fractions rule out the possibility of large amounts of soaps of fatty acids.

Aluminum Salts of Fatty Acids After Use of Aluminum Hydroxide. Following a hemorrhage of duodenal ulcer origin in a patient using aluminum hydroxide as an antacid, small concentrations of aluminum soap were found in the stool. Chemical analysis showed concentrations to be composed of fatty acid salts of aluminum with a small amount of neutral fat and traces of cholesterol and protein. The condition cleared up spontaneously when the patient was given increasing amounts of food.

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 213, March, 1947

*Thiamine circulation time. A. Ruskin and G. M. Decherd, Jr.—p. 337

Thiamine Circulation Time. Injection of large doses of thiamine hydrochloride has been used as a method of measuring the speed of blood flow from arm to tongue. In normal adults the circulation time was 5 to 12 seconds. A satisfactory method of checking circulation time is especially important in diagnosing and following up cases of congestive heart failure. Heretofore drugs, such as calcium gluconate, magnesium sulphate, and decholin, gave false high readings. Although the thiamine method requires complete cooperation of the patient and injection of large doses, it has been found to be a safe and more exact method.

THE AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 148, March, 1947

*Effect in young men consuming moderately restricted quantities of B-complex vitamins and protein, and changes associated with supplementation. G. H. Berryman, C. R. Henderson, N. C. Wheeler, R. C. Cogswell, J. R. Spinella, W. E. Grundy, H. C. Johnson, M. E. Wood, and C. W. Denko.—p. 618.

Effects of Restricted and Supplemented Diets in Young Men. Following an initial control period of twelve weeks on a normal diet, seven normal males consumed daily for thirty-five weeks a diet containing approximately 3000 calories, with restricted levels of the B vitamins and protein limited to 45 gm. (94 per cent non-animal in origin). After five weeks of the restricted intake, two of the subjects were chosen as controls and thereafter received supplements of nutrients in amounts which made their total intake equal to or slightly higher than the levels during the control period. Incontrovertible stigmata of specific deficiencies were not observed in the experimental subjects although a number of suggestive signs were present in varying degrees. Body weight declined only moderately. The supplemented control group did not show any symptoms. Symptoms reported by the experimental group were lassitude, insomnia, sore mouth, pyrosis, anorexia, nausea, vague paresthesias, and severe cramping pains of the extremities. Personality appraisal scores indicated a change toward hysteria, depression, and hypochondriasis. When the experimental subjects received supplements, no evidence was obtained pointing to a "magical" effect of any one nutrient. Improvement in physical performance was more rapid in subjects receiving the complete group supplementation than in those receiving additions of nutrients one at a time. The diet given to the experimental subjects was obviously not adequate.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 37, February, 1947

*Problems of an aging population, public health aspects of diabetes. H. L. C. Wilkerson.—p. 177.

Public Health Aspects of Diabetes. A major health problem of our nation is that of diabetes. It has advanced in rank as a cause of death from twenty-fifth place in 1900 to ninth in 1940. Through organized community effort an attempt should be made to identify early cases; to prevent the disease, particularly among the susceptible; to prolong the lives of diabetic patients; and to lessen the national economic burden produced by its complications. Presented in this article is a basic preventive program that should be suitable for the average local health department. Particular stress is laid on early diagnosis and preventive education.

ANALYTICAL CHEMISTRY

Vol. 19, January, 1947

*Analytical methods for carotenes of lycopersicon species and strains. F. P. Zscheile and J. W. Porter.—p. 47.

Analytical Methods for Carotenes. Efforts are being made to increase the vitamin content of tomatoes. Spectrophotometric methods have proved valuable in studies con-

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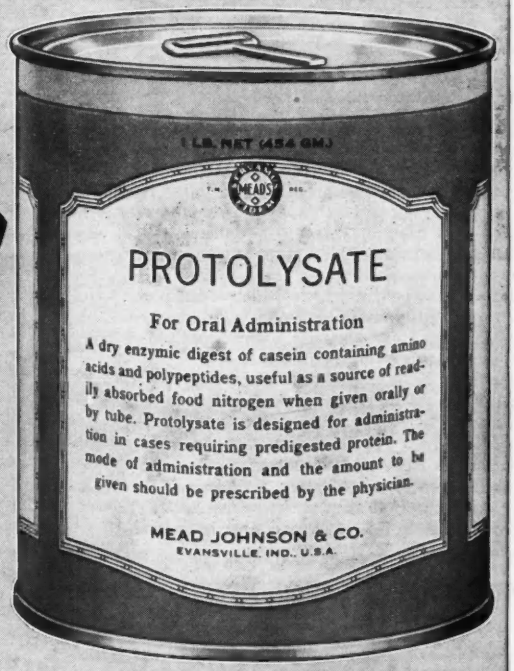
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ducted to develop improved strains of tomatoes, genetically constituted to contain more pro-vitamin A. The procedures used to determine β-carotene and lycopene are described and the results compared with those obtained by chromatographic analysis. Although the chromatographic method gives greater accuracy, the more rapid spectroscopic procedure is considered adequate for survey work involving large numbers of samples, when only large differences are significant.

ARCHIVES OF INTERNAL MEDICINE

Vol. 79, March, 1947

*Primary hypertrophy and hyperplasia of the parathyroid glands associated with duodenal ulcer. H. M. Rogers, F. R. Keating, C. G. Morlock, and N. W. Barker.—p. 307.

Duodenal Ulcer. A case history of a man with a healed duodenal ulcer is given. All of his symptoms in later years were attributed to the ulcer, but they were actually manifestations of severe hyperparathyroidism. The patient complained of skeletal pain, gastric distress, vomiting, anorexia, and weakness. Autopsy findings indicated hypertrophy of the parathyroid glands. In retrospect, it appeared that many of the symptoms could have been those due to hyperparathyroidism. The old ulcer condition, however, had confused the diagnosis. It is reasonable to wonder if the ingestion of alkalis, calcium, or phosphorus used in treating the ulcer may not have stimulated the parathyroid hyperfunction.

BRITISH MEDICAL JOURNAL

No. 4492, February 8, 1947

*Deficiency diseases in reoccupied Hong Kong. L. Fehily.—p. 220.

No. 4493, February 15, 1947

*Water and salt depletion. H. L. Marriott.—p. 245.

No. 4496, March 8, 1947

*Water and salt depletion. H. L. Marriott.—p. 285.

No. 4497, March 15, 1947

*Water and salt depletion. H. L. Marriott.—p. 328

Deficiency Diseases in Reoccupied Hong Kong. After the liberation of Hong Kong, gross deficiency diseases were expected but did not appear even though the population was in a state of subnutrition. Six months after reoccupation, a nutritional survey of infants was made, and it was found that mild and chronic B-complex deficiency still existed. Ariboflavinosis was relatively more evident than before the war. Acute infantile beriberi had virtually disappeared. One year after reoccupation the health of the population had greatly improved, and the mortality rate had been reduced to less than one third the rate prevailing in the years immediately preceding the war.

Water and Salt Depletion. This is a reprint of the Croonian Lectures delivered at Royal College of Physicians in London in December, 1946. Background discussion of basic physiological considerations, normal body water balance, and water balance in children is presented before the cause and effect of dehydration is discussed. The three kinds of depletion that arise are classified as: (a) pure water depletion, (b) pure salt depletion, and (c) mixed water and salt depletion.

BULLETIN OF THE JOHNS HOPKINS HOSPITAL

Vol. 80, March, 1947

* Studies on the protein metabolism of the infant. I. The comparative biological value of some milk protein preparations. A. A. Albanese, L. E. Holt, Jr., V. Irby, S. E. Snyderman, and M. Lein.—p. 149.

* Studies on the protein metabolism of the infant. II. Tryptophane requirement of the infant. A. A. Albanese, L. E. Holt, Jr., V. Irby, S. E. Snyderman, and M. Lein.—p. 158.

Protein Metabolism of the Infant. The biological value of an enzymatic digest of casein (Amigen) and lactalbumin (Edamin), as well as a tryptophane- and cystine-supplemented acid digest of casein, was tested and compared with that of an evaporated milk formula. For short periods of time, results indicated that the evaporated milk, Amigen, and Edamin formulae gave the same biological value; this is based on nitrogen balance studies and body weight measurements. The CTH (acid hydrolysate) gave the poorest results by all criteria.

Tryptophane Requirement of Infants. It is an accepted fact that infants require five times as much protein as adults per kilogram of body weight. The aim of this study was to determine the need for any specific amino acid. It was found that the infant requires five times as much tryptophane per kilogram as an adult. Within ten days, the infants on a tryptophane-deficient diet developed hypoproteinemia; adults showed no symptoms on a deficient diet for six weeks. In every instance of decrease in weight on the deficient diet, a drop in nitrogen retention was noted before the weight loss. Infants on the diet low in tryptophane developed anorexia; it quickly disappeared when this amino acid was added to the diet. It is concluded that normal infants require 30 mg. of l(−)-tryptophane per kilogram per day for the maintenance of normal growth, nitrogen retention, and plasma protein levels.

HOSPITALS

Vol. 2, March, 1947

*Some coming events. O. Webber.—p. 46.
*Floor service kitchen. M. N. Lewis —p. 48.
Modern refrigeration. J. F. Manion.—p. 51.
*Adequate ventilation. S. R. Lewis.—p. 54.
* In advanced planning for kitchens, Sweden pioneers. M. Gillam.—p. 78.

Coming Events in Large Scale Service. Planning procedures for new food service units are changing. Recent developments in food products and equipment may make it possible for institutions to release floor areas which are now part of the food service unit. Pre-cooked meals and electronic ovens will make it possible to by-pass main kitchens, and disposable ware will reduce dishwashing. These innovations and others will change the entire dietary department—the equipment, techniques, and staff.

Floor Service Kitchen. There are many factors involved in designing good floor serving kitchens in hospitals. These factors are discussed and illustrations are given of two floor plans. One represents the typical floor kitchen planned without the dietitian's help and patterned after kitchens in homes. The second plan shows the basic fundamentals of a good food service. Stress is placed on the importance of complete cooperation. Only when the architect, dietitian, and various specialists work together can the numerous problems be solved adequately.

Adequate Ventilation. The problems and solutions to adequate kitchen ventilation are presented in the article. Diagrams of proper ventilation are included. The importance of ventilation for happier and healthier employees is stressed.

In Planning for Kitchens, Sweden Pioneers. The government of Sweden appointed a committee to "rationalize" hospital kitchen planning. As a result of the work of this committee, principles to be used in planning have been established. Regulations covering location, layouts, and equipment for kitchens of various sizes have been published, and Swedish manufacturers are making equipment to specifications. It is built for efficiency and sanitation and is standardized to decrease the number of manufactured items. A scale of the number of square feet of space in the kitchen per person served has been worked out. Descriptions and illustrations of the very modern Swedish equipment are included.

Post Scripts ... by Ken Ruker

GOOD HABITS FORMED EARLY LAST A LIFETIME!

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* Corn Toasties (1 oz.), milk (4 oz.), sugar (1 tsp.).
** Protein based on 70 g., niacin based on 15 mg.

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FOR INSTANCE... ...TENDER-CRISP, EXTRA THIN

POST'S CORN TOASTIES

POST CEREALS ARE PRODUCTS OF GENERAL FOODS

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 133, March 15, 1947

*Folic acid in pernicious anemia. R. Heinle and A. Welch.—p. 739.
Glucose vs. anoxia. Current comment.—p. 776.

Vol. 133, April 5, 1947

*Oxalic acid. An editorial.—p. 1010.

Folic Acid in Pernicious Anemia. A case is reported in which neurological relapse occurred in the patient after a normal blood picture had been attained and had been maintained with folic acid. The relapse occurred suddenly, progressed rapidly, and responded to liver therapy slowly. The absence of all teeth prevented normal dietary intake. The possibility that folic acid not only fails to prevent, but actually may precipitate neurologic relapse is considered. It is not justifiable to consider folic acid as a complete substitute for liver extract in the treatment of pernicious anemia in the light of present knowledge.

Glucose vs. Anoxia. Studies have been made which confirm evidence that high-carbohydrate diets increase aviation performance significantly. Volunteers were given 80 gm. of dextrose dissolved in 350 cc. of water, with or without the addition of ascorbic acid, 2 hr. after a meal. Control feedings were made with 0.2 gm. of saccharin substituted for dextrose and with citric acid substituted for ascorbic acid. There was a 40 per cent prolongation of "useful consciousness" as the result of preflight glucose feeding. Ascorbic acid was without demonstrable effect.

Oxalic Acid. The necessity for new investigations of the physiologic chemistry of oxalic acid is pointed out. It has been demonstrated that the utilization of calcium in young children is affected neither by spinach nor oxalate in moderate amounts, contrary to previous views. In rats as much as 0.9 per cent oxalate did not adversely affect growth and skeletal development when diets were adequate in vitamin D, calcium, and phosphorus. There is some evidence that oxalic acid protects teeth against erosion by other acids. Furthermore, since dicarboxylic acids take part in the metabolism of all of the major foodstuffs, the biologic significance of oxalic acid requires more clear cut definition.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 167, February, 1947

*The excretion of nicotinic acid derivatives after ingestion of tryptophane by man. W. A. Perlzweig, F. Rosen, and N. Levitas.—p. 511.
*The effect of fat on the absorption and utilization of galactose by the rat. M. L. Nieft and H. F. Deuel, Jr.—p. 521.

Vol. 167, March, 1947

*The state of vitamin A in colostrum and in milk. D. B. Parrish, G. H. Wise, and J. S. Hughes.—p. 673.
*Further studies on the amino acid composition of seed globulins. E. L. Smith and R. D. Greene.—p. 833.

The Excretion of Nicotinic Acid. Administration of tryptophane to rats is followed by increased excretion of nicotinic acid derivatives in the urine. Observations were made to test this effect in man. Experiments were performed on six normal premature infants, one full term baby, and four young adults. There was a prompt and marked increase in the urinary excretion of nicotinic acid derivatives.

The Effect of Fat on Galactose Metabolism. There have been conflicting reports concerning the influence of fat on the galactose metabolism in the rat. An attempt was made to correlate the results. Albino rats were placed on diets varying in fat content. Results showed that the addition of 28 per cent of fat to a high-lactose diet would reduce galactosuria. It was also noted that when the lactose level was constant, the urinary galactose excretion varied inversely with the percentage of fat in the diet. When fat represented 20 per cent of the diet, butter fat, corn oil, and cottonseed oil gave essentially the same effects. However, when the fat content was reduced to 10 per cent, cottonseed oil gave significantly lower urinary excretion values than the other types of fat.

Vitamin A in Colostrum and Milk. A chromatographic method by which the ester and alcohol forms of vitamin A in colostrum and milk can be separated has been developed. The method is explained and discussed. Practically all of the vitamin A in colostrum and in milk was in the ester form. As data on the pigment distribution were also collected, it was found that most of the fat-soluble yellow pigment of both colostrum and milk was carotene.

Amino Acids in Seed Globulins. Although microbiological procedures provide relatively simple and rapid methods of analysis of amino acids, strict controls are necessary in order to obtain satisfactory results. Protein preparations of known reproducibility and composition are used for this purpose. As crystalline globulins from plant seeds should provide satisfactory standards, hemp, tobacco, pumpkin, squash, watermelon, and cucumber have been analyzed for arginine, histidine, lysine, isoleucine, threonine, methionine, and cystine. The chief characteristic of the composition of these proteins was their high arginine content. All of the proteins gave comparable results for the various amino acids.

JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 8, December, 1946

*Food standards. B. E. Nettleton.—p. 65.
*Recent developments in food technology. J. Butterfield.—p. 70.

Food Standards. A review is given of the factors upon which successful operation of a food service organization depends. The importance of adequate supervision and employee training is stressed; suggestions are given for improving the quality of foods; variety in menus is discussed; and the subject of food cost is mentioned.

Developments in Food Technology. Improvements in the processing and preservation of foods are described. In the frozen food industry methods of processing have been improved, and attempts have been made to freeze foods by immersing them in a non-toxic liquid which will evaporate. Dehydration methods have advanced greatly, and "dehydrofreezing" has been introduced. Measurements of fluorescence as a technique for quality control in food processing is being used. In Germany, methods have been developed for producing synthetic fat, for sterilizing foods by means of ultra violet rays and filtration, and for concentrating fruit juices. Electronic cooking is another recent development. The food processing industry has been stimulated due to wartime research.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 16, October, 1946

*Poverty and nutrition. A. J. Faridi.—p. 12.

Poverty and Nutrition. In India the diet of the common man is extremely inadequate. The typical meal gives the average laborer only 65 per cent of his minimum food requirements. Because prices of milk, leafy green vegetables, and fats are prohibitive, the situation is extremely serious. Not only must prices be controlled or wages raised, but the people must be educated in the science of nutrition.

What a difference from their daughters!

From middies to "midriffs"— bloomers to bobby socks! There've been some changes, all right, in the past generation. More, in fact, than you might suspect. For one thing—Betsy Co-ed's grown a good bit *taller* since mother played center on the team!

Today's average college girl has added an inch and a half over the class of thirty-odd years ago. That's what the measuring yardstick at Vassar, Smith and Barnard shows. And the University of California reports the increase often touches two whole queenly inches!

This doesn't mean we're raising a race of Amazons. The average height of men has been going up, too. But it does mean younger folk have better *foods* to "grow on" than their parents ever did. And these better foods have come about through forward strides made in the laboratory.

Many of them are developments of National Dairy Laboratories — for the very good reason that milk, nature's most nearly perfect food, offers virtually all the raw materials of modern nutritional research.

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THE JOURNAL OF NUTRITION

Vol. 33, March 10, 1947

*The relationship of nicotinic acid, tryptophane, and protein in the nutrition of the pig. R. W. Luecke, W. N. McMillen, F. Thorp, and C. Tull.—p. 251.

*Work performance, respiratory exchange, and certain blood constituents after isocaloric meals of low and high carbohydrate content. J. Haldi and W. Wynn.—p. 287.

*Improving the nutritive value of flour. I. The effect of supplementing enriched flour with other B-complex vitamins. B. D. Westerman and G. Hall.—p. 301.

*On the growth-promoting factor for rats present in summer butter. J. Boer, B. C. Jansen, and A. Kentie.—p. 339.

Niacin and Tryptophane in Pigs. When a high protein, low nicotinic acid, corn ration was fed to weanling pigs, mild symptoms of nicotinic acid deficiency occurred. The symptoms of nicotinic acid deficiency were confined entirely to the large intestine and particularly to the colon. The lowering of the protein content of the same corn ration to 14 per cent produced very severe inflammation in the large intestine. Supplementing this ration with 200 mg. of d,l-tryptophane per day per pig gave excellent growth response. Two of the animals showed a very mild inflammatory condition of the large intestine. No symptoms of nicotinic acid deficiency were noted when the corn was replaced by oats.

Work After Carbohydrate Meals. Three adult males, two adolescent males, and one adult female, ranging in age from fourteen to thirty-seven years and in weight from 120 to 200 lb., were chosen as subjects to determine the effect of high- and low-carbohydrate meals on work performance, respiratory exchange, and blood constitutents. Work output, muscular efficiency, and percentage recovery (measured by a comparison of the work performance in the first and second exercise periods) were not diminished by a high-carbohydrate intake 2 to 3 hr. before exercise. After the high-carbohydrate meal the blood sugar level immediately before exercise was higher than at the corresponding time after the low-carbohydrate meal. The data on the blood sugar levels and the respiratory quotient are interpreted as indicating that a greater portion of the energy used during exercise was derived from carbohydrate in the experiments with a high-carbohydrate meal than in those where there was a low-carbohydrate intake. There was no age or sex difference in the comparative work performance on the two types of meals. At no time throughout the experiments was there any evidence of the so-called hypoglycemic reaction to the high-carbohydrate meal. The data of these experiments are offered as confirmatory evidence for the conclusion drawn from other observations that a hypoglycemic reaction is not the usual physiological response to a high-carbohydrate meal.

Nutritive Value of Flour. Evidence has been presented to show that the supplementing of enriched flour with B-complex vitamins aids in the proper oxidation of carbohydrates. Under conditions of the experiments the addition of 1 mcg. of riboflavin per gram of enriched flour produced an increase in the growth rate of albino rats. The addition of 1 mcg. of riboflavin and 1 mcg. of thiamine to the enriched flour stimulated even greater growth of the animals. The addition of 10.3 mcg. of calcium pantothenate and 3.5 mcg. pyridoxine per gram of enriched flour was beneficial, but a still greater increase in growth resulted when 20.5 mcg. of calcium pantothenate and 7 mcg. pyridoxine per gram were added to the enriched flour.

Growth Factor in Summer Butter. Evidence is presented here of a growth promoting factor present in summer butter which is not vitamin A or D. The fraction obtained from summer butter fatty acids consists chiefly of vaccenic acid. When this fraction was added to a basal diet containing rapeseed oil, growth became better.

THE JOURNAL OF PEDIATRICS

Vol. 30, February, 1947

*Intraventricular block in malnutrition and vitamin B deficiency. K. Braun, I. Roth, and S. Suesskind.—p. 177.

Vol. 30, March, 1947

*Effects of maternal undernutrition upon the newborn infant in Holland. (1944-1945). C. A. Smith.—p. 229.

*Children born during the siege of Leningrad in 1942. A. N. Antonov.—p. 250.

Intraventricular Block in Vitamin B Deficiency. This article presents two cases of reversible intraventricular block. Both patients had been suffering from prolonged diarrhea and were poorly fed. In the first case improvement in the electrocardiogram took place nine days after beginning treatment with thiamine, niacin, and liver extract. In the second case the disappearance of the electrocardiographic abnormalities were observed after five days of treatment with niacin only. It seems, therefore, that the vitamin deficiency was mainly responsible for the unusual and marked electrocardiographic abnormalities.

Effects of Maternal Undernutrition on the Newborn. During the six or seven months which preceded the liberation of northwestern Holland in May, 1945, a state of severe generalized undernutrition was prevalent in urban areas. The effects of this nutritional crisis upon the infant at birth were investigated. Several of the results were so widely at variance with those of other studies as to indicate that great caution must be used in evaluating the maternal-fetal aspects of nutrition. However, evidence was given that fetal growth may be retarded by lack of proper maternal diet.

Children Born During the Leningrad Siege. The severe quantitative and qualitative hunger from which the women of Leningrad suffered during the siege affected the courses and results of their pregnancies and the condition of their newborn children. During the severe hunger (1942), stillbirths rose to 5.6 per cent, twice the normal figure; the rate of premature births reached 41.2 per cent. The morbidity of the newborn was unusually high, 32.3 per cent, owing in part to their low vitality. It is apparent that the condition of the mother's body is of great consequence to the fetus and that severe quantitative and qualitative hunger of the mother decidedly affects the development of the fetus and the vitality of the newborn child.

THE LANCET

Vol. 1, February 1, 1947

Liver extract, folic acid, and thymine in pernicious anemia and subacute combined degeneration. T. D. Spies and R. E. Stone.—p.174.

Vol. 1, February 8, 1947

*Malnutrition of Indian prisoners of war in the Far East. J. H. Walters, R. J. Rossiter, and H. Lehmann.—p. 205.

Vol. 1, February 15, 1947

*Blood volume changes in protein deficiency. J. H. Walters, R. J. Rossiter, and H. Lehmann.—p. 244.

Vol. 1, March 8, 1947

*Enough to eat?—p. 293

Vol. 1, March 29, 1947

*Ascorbic acid metabolism of Bantu soldiers. A. Kekwich, R. J. Wright, and A. B. Raper.—p. 397.

Malnutrition of Indian Prisoners of War. Clinical and laboratory findings based on a study of 2000 Indian prisoners liberated from Japanese prison camps are outlined. The

It's a happy breakfast order!

this delicious dish
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Glad grins greet breakfast when Nabisco Shredded Wheat is included in patients' diets! These crunchy, golden-good biscuits have the zesty flavor of sun-ripened whole wheat . . . and all its natural nutrition. Nabisco Shredded Wheat is just as nourishing as "cooked" cereal—and the one breakfast food that can be served hot or cold! Serve the original Niagara Falls product often—it's a practice patients applaud!

Delicious, ready to serve...
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prisoners from the Far East differed from those in Europe in three main respects: anemia was macrocytic rather than normocytic; the incidence of diarrhea was much less; and the incidence of the neuropathies was much greater.

Blood Volume Changes in Protein Deficiency. Plasma and blood volume observations were made on Indian prisoners liberated from Japanese prison camps and on a control series of apparently healthy Indians. Chief findings on admission of the ex-prisoners were: normochromic macrocytic anemia; reduction of serum-total protein concentration which was confined almost entirely to the albumin fractions and hence a reduction of the albumin/globulin ratio; a reduction in body weight; little change in plasma volume; a reduction of total circulating hemoglobin, total circulating red cells, and total circulating plasma protein. The rate of recovery was noted. All patients showed a return to normal in approximately sixteen weeks.

Enough to Eat? For full physical and mental health, the national [English] diet must be improved, although it is far above the starvation level of the eastern European nations. The margin between safety and sub-standards is very small. An industrial worker seeks to offset the monotony of his job by excitement in relaxation; present monotony of diet does not help his state of mind. Food control concerns not only the dietitian, nutritionist, and psychologist but also those who grow, buy, and cook the food. The country needs greater production and more agricultural equipment to meet nutritional demands.

Ascorbic Acid Metabolism. This is essentially a dietary survey on African army personnel; almost all subjects were Bantu natives. A group of 474 men on the standard army ration were served a daily ration containing 105 mg. of ascorbic acid. The sources were mainly oranges and fresh vegetables. The African discarded about 70 per cent of his orange because he does not relish fruit; vegetables were carelessly prepared and overcooked, and thus contained far less ascorbic acid than had been calculated. Intake of the vitamin was actually about 15 mg. As a result of various tests, it appeared that ascorbic acid deficiency was related to the ill health of the Africans.

THE NEW ZEALAND MEDICAL JOURNAL

Vol. 45, October, 1946

*Report on the incidence of rickets in New Zealand. J. Malcolm.—p. 428.

The Incidence of Rickets. The incidence of rickets in New Zealand has been investigated. Junctions of rib and cartilage obtained post-mortem from young children were examined histologically. In the age group of three weeks to four years, sixty-seven cases were studied. The incidence of rickets was approximately 20 per cent. No evidence of active rickets could be found in twenty-two infants under three weeks old, or in nineteen children over four years old. Several cases of scurvy were found.

NUTRITION REVIEWS

Vol. 5, March, 1947

*The nutritionist's interest in soils and agriculture. W. J. Darby.—p. 65.
*Present knowledge of the relation of nutrition to dental caries.—p. 68.

The Nutritionist's Interest in Soils and Agriculture. Within recent years the broad scope of the field of nutrition has been more fully realized. An example of this viewpoint is found in the Food and Agriculture Organization of the United Nations (FAO). Realizing the fundamental relationships of nutrition to agricultural and soil programs, the FAO is dedicated to furthering good use and good management of the soil. The problems involved in food production are numerous. Analyses of these problems have been made by Sir Cedric Hicks, F. A. Pearson, and F. A. Harper. Estimates of arable land differ, and there are other variances. The need for more reliable information is evident. However, both analyses lead to the conclusion that as long as our food supply depends upon the present type of agriculture, the number of people which the world's food supply will support will depend upon the standard of living of those people. A common effort is being made to provide the best possible nutritional level for the greatest number of persons.

Nutrition and Dental Caries. Investigations of the effects of diet on tooth decay are summarized. An adequate diet was shown to arrest dental caries activity. This seemed to be true whether the carbohydrate content was high or low. However, more investigation is needed as to the influence of sugar upon dental caries incidence. Specific nutrients have proved to be beneficial. Vitamin D, when added to the diet or obtained through sunshine, aids in preventing tooth decay. This vitamin is also instrumental in the maintenance of normal calcium and phosphorus metabolism. Adequate retention of these minerals maintains low incidence of dental caries. Studies are now being made of the value of adding fluorine to drinking water. To lower the incidence of dental caries, such facts as those mentioned in this paper should be stressed in nutritional programs

THE PSYCHIATRIC QUARTERLY SUPPLEMENT

Vol. 20, Part 1, 1946

*The cruel vegetarian. H. S. Barahal.—p. 3.

The Cruel Vegetarian. This is an attempt to explain the psychology of a person who practices vegetarianism which consists essentially in the exclusion of flesh, fowl, and fish from the dietary. Many vegetarians choose to follow this dietary regime because of certain psychological drives and are honest and sincere about their opinions, and some follow it because of religious beliefs. Others will list many different reasons: animals are affected by diseases which can be transmitted to man; animal flesh produces toxic products in the body; meat is more expensive than are vegetables; and, as civilized individuals, it is morally wrong to kill other living creatures. From a psychological point of view, this last argument is of greatest interest. After considering individual cases of vegetarianism, the author has come to the conclusion that rather than being the sympathetic and compassionate animal lover, such a person has underlying tendencies for cruelty and sadism. He also believes that a vegetarian is rarely an entirely normal, well adjusted individual, and that his views on politics, religion, economics, love, and other fields will frequently reveal somewhat twisted and peculiar attitudes and prejudices.

PUBLIC HEALTH REPORTS

Vol. 62, March 21, 1947

*The effect of topically applied sodium fluoride on dental caries experience. J. W. Knutson, W. D. Armstrong, and F. M. Feldman.—p. 425.

Effect of Sodium Fluoride on Dental Caries. This is one of a series of reports on the effect of topically applied sodium fluoride on dental caries. Three groups of Rochester, Minnesota, school children were used for this experiment. They received two, four, and six applications of 2 per cent sodium fluoride solution to the teeth in one half of the mouth. The untreated teeth served as controls. The incidence of initial caries in permanent teeth which were noncarious at the time of treatment and the number of additional permanent tooth surfaces which became carious in teeth that

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were already carious were less in the fluoride-treated teeth than in the untreated teeth. The fluoride applications were not preceded by a dental prophylaxis. A comparison of these results with those previously reported in which a dental prophylaxis had been a part of the treatment indicates that the omission of a dental prophylaxis materially reduces the caries-inhibiting effect of the topical fluorides.

SCIENCE

Vol. 105, March 14, 1947

Photoinactivation of milk fat lipase and the origin of bitter flavor in milk. V. N. Krukovsky.—p. 283.

Vol. 105, March 21, 1947

*Depletion of vitamin A reserves in the livers of cattle. P. R. Frey and R. Jensen.—p. 313.

Vol. 105, April 4, 1947

*Variation among lamb carcasses in the B vitamin content of meat. S. Cover, E. M. Dilsaver, and R. M. Hays.—p. 364.

Vol. 105, April 11, 1947

*Environment and food intake in man. R. E. Johnson and R. M. Kark.—p. 378.

Vitamin A Reserves in Cattle. The data obtained through a study of the depletion of vitamin A reserves in the livers of steers while in the feed lot revealed some interesting relationships. There was a decreasing rate of loss of vitamin A reserves throughout the experimental period. This loss was shown to be directly proportional to the total reserves of the vitamin in the body.

The Vitamin B Content of Lamb. This study was made in an effort to ascertain the reason for variations in the B-vitamin content of meat. Determinations for thiamine, pantothenic acid, niacin, and riboflavin were made on four samples from each of six lots of lamb carcasses. The results showed a significant difference, which could not be accounted for, in the B-vitamin content from carcass to carcass. As sheep are known not to require these vitamins, the variance is of special interest. Further research is necessary to determine whether environmental or genetic factors control the B-vitamin deposition in meat.

Environment and Food Intake. Throughout the war the food habits of American and Canadian soldiers were observed. As a result, it was possible to determine the effects of different environments on the voluntary food intake of men doing the same type of work. There was a striking relation between the average daily caloric intake and the mean environmental temperature to which the men were exposed. Whereas the daily intake in the tropics was about 3100 calories, it increased to about 4900 calories in the Arctic. Regardless of environment, the percentage of protein consumed was practically constant and fat intake was high. It is apparent, from this study, that the same general types of rations can be provided for all ground troops, but greater quantities are needed in a cold climate.

SOUTHERN MEDICAL JOURNAL

Vol. 40, February, 1947

*Nutritional factors in prevention and treatment of hepatic injury due to industrial poisons. J. H. Eddy.— p. 171.

Nutritional Factors in Prevention and Treatment of Hepatic Injury. It appears from clinical trial and laboratory investigation that the protein intake, and more specifically the methionine intake, is most important in the prevention and treatment of liver damage. The use of protein foods and methionine or cystine plus choline in the treatment of other types of hepatitis needs more consideration. These materials have been effective in the treatment of hepatic cirrhosis.

AMERICAN RESTAURANT

Vol. 31, February, 1947

Better breakfast bureau.—p. 14.
*The railroads look ahead, too.—p. 33.
Industrial feeding is growing in stature.—p. 34.
February seasonal foods. G. Wenzel.—p. 88.
*And what happened to the food dollar? Horwath and Horwath.—p. 96.

Railroad Dining Cars. Railroads today are returning to their famous prewar service. The Union Pacific's 110 dining cars, now under the supervision of Grace Merrill, have restored *á la carte* menus, luncheon service, and practically all food items are listed on the menu. New additions are eight lunch counter diners, improved refrigeration and cooking facilities, anti-bacteria lamps, new foods, and better service.

The Food Dollar. A table is given showing cost of food groups based on the purchases of four New York hotels during (a) the period of wartime rationing and ceilings, (b) the period when only a few staples were rationed, and (c) the period from June to September, 1946, when price controls were on and then off and the September 9 order which rolled back menu prices. Food buying was affected more by price control than by rationnig. In June, 1946, hotels were spending a lower percentage of the food dollar on meat than they did during rationing. Poultry and seafood consumption increased. With the elimination of the O.P.A. (June 30) meat began appearing on the market; thus July's consumption of meat rose 4.41 points over June, and figures for August advanced another 8.69 points. Then the meat figures were within two points of the 1942 normal consumption level. On September 9, when O.P.A. rolled back the meat menu prices to the April, 1943, levels, meat consumption decreased. The purchase costs of meat were far above the menu prices; consequently less meat was offered on the menus.

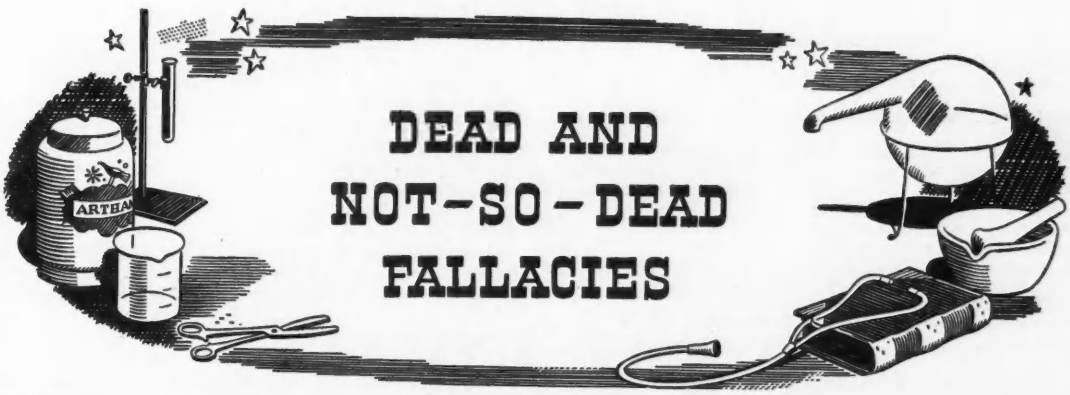
CONSUMER'S GUIDE

Vol. 13, March, 1947

Do you agree?—p. 3.
Big news for home canners.—p. 11.
*Here comes citrus.—p. 13.
*Potatoes on the upgrade.—p. 14.

Here Comes Citrus. A record crop of citrus is expected this year. This includes 18 per cent more oranges than last year, 4 per cent more grapefruit, and a 14 per cent increase in tangerines. The lemon crop will be about 4 per cent below last year but 21 per cent above average. Some of the newer products are tangerine juice; frozen, single-strength citrus juice; frozen, concentrated citrus juice; and citrus crystals in powder form.

Potatoes on the Upgrade. As a result of the surplus potato crop, the Department of Agriculture is urging that the size of U. S. No. 1 potatoes be a minimum diameter of 2½ in. for the round and 2 in. for the long potatoes. Reasons for over-production are increased acreages in the better producing regions, new and efficient insecticides, fine weather, and good growing conditions. The article includes suggestions for conserving the food value of potatoes in cooking.



In ancient Greece, the roots of the mandrake were regarded as a panacea.

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Some folks believe that unless canned foods are thoroughly cooked they should not be served.

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FOOD INDUSTRIES

Vol. 19, February, 1947

*Frozen food report no. 2—Marketing. C. R. Havighorst and H. C. Diehl.—p. 73.
*Material standards for the food industries. R. E. Worden.—p. 87.
Using soybean lecithin in the macaroni industry—Part I. J. J. Winston and B. R. Jacobs.—p. 90.
*How to work out a sanitation program in a food plant. J. L. Barron.—p. 94.
Physically handicapped make good employees. M. Hutchison.—p. 96.
Processing food for sterilization—Part II. C. O. Ball.—p. 98.
Packaging the gobbler. C. Pollock.—p. 103
Rapid dissolved oxygen test for fresh citrus juices. J. R. Lindquist.—p. 106.
Edible oil industry in Germany—Part I. W. H. Goss.—p 108.
Container breakage reduced by infrared. J. R. Heilman.—p. 117.
*Alamalt.—p. 120.

Vol. 19, March, 1947

*New products through research. F. L. Seymour-Jones.—p. 75.
*Degree of maturity influences the quality of frozen peas—Part I. J. P. Nielsen, H. Campbell, C. S. Bohart, and M. P. Masure.—p. 81.
*New food packaging problems and how to handle them. J. V. Ziemba.—p. 85.
Applying control chart methods to taste testing. S. Marcuse.—p. 92.
Canners convention highlights.—p. 95.
Testing packaging materials for quick frozen oysters. S. R. Pottinger, R. G. Kerr, and W. B. Lanham, Jr.—p. 100.
Using soybean lecithin in the macaroni industry—Part II. J. J. Winston and B. R. Jacobs.—p. 103.
*How storage affects frozen cakes and batters. L. S. Graul and B. Lowe.—p. 106.
*What's ahead in milk processing—Part I. M. E. Parker and E. S. Stateler.—p. 109.
Processing food for sterilization—Part III. C. O. Ball.—p. 114.
*Method developed for dehydration of pears.—p. 136.
*Sweetening from fruit.—p. 187.

Marketing Frozen Food. Due to rapid expansion, the frozen food industry has grown beyond the available low temperature distributional facilities. This hazardous situation is a result of the lack of industrial integration. Factors which must be considered by the frozen food industry as it expands are discussed.

Material Standards. The problem of excessive costs is common in the food processing industry. Raw materials can be responsible for as much as 75 per cent of the total cost of goods sold. In order to increase yields and decrease costs, it is necessary to adopt a program for developing material standards. By establishing specifications for purchasing raw materials and by improving methods and equipment, substantial savings can be effected. Suggestions are given by which material standards can be established.

Sanitation Program in a Food Plant. Because the need for a thorough sanitation program in food plants is so apparent, action must be taken by management. Attitudes and policies on sanitation are vitally important if clean, wholesome, safe food is to be produced. If possible, a sanitation department should be organized and a qualified sanitarian employed. If food plants will establish sanitary departments, many of the problems of enforcing food laws and regulations will be solved.

Alamalt. This is a flour made by grinding sweet potato crisps. It is a doubly precooked product with a sugar content of 38 to 42 per cent. It has a caramel flavor and in some products possesses a moisture-holding property.

New Products Through Research. Because the food market is relatively stable, a food company, in order to progress, must watch the public taste in food, keeping ahead of it if possible, but never falling behind. Factors to be considered in selling a new product are discussed.

Maturity of Frozen Peas. Of the vegetables preserved by freezing, peas head the production list. Postwar expansion will partially depend upon the industry's ability to maintain high and uniform standards of quality. Maturity affects the quality of frozen peas because of its relation to color, flavor, and texture. As peas increase in maturity, they increase in solids and starch content. Experiments suggest that starch content of the frozen product can be used as an index of maturity of raw stock.

New Food Packaging Problems. Packaging development work must be organized. It is suggested that each company establish a committee to control research. The work of this committee is outlined and the problems involved in testing packages are mentioned.

How Storage Affects Frozen Cakes and Batters. In frozen bakery goods any ingredient may cause difficulty in the keeping quality of the product. In general, the deleterious effect of freezing on the volumes of frozen baked cakes and cakes baked from frozen batters was progressive with storage longer than two months. Although a difference in color, aroma, and flavor were noticeable after two months of storage at 0°F., other cakes from the same mixes stored at −10°F. did not show these characteristic changes. With longer storage the color did not change perceptibly, but the aroma and flavor did deteriorate. The addition of synthetic vanilla to the mixes produced unpalatable cakes at both storage temperatures. Frozen cakes had better volumes and received higher palatability ratings than cakes baked from frozen batters obtained from the same mixes. This experimentation provides further advancement in the field of frozen cakes and cake batters, but there are still many unsolved problems.

What's Ahead in Milk Processing. Present trends indicate that there will be an over-supply of milk for manufacturing uses. With the end of meat rationing and the resulting decrease in the use of cheese, more milk has been diverted to butter making. This diversion, plus the churning of frozen cream for butter and an increased milk flow due to mild winter weather, have contributed to a rapid increase in the production of high grade butter, and to rapid declines in the price of 92-score butter on the major markets. These movements are preliminary to the development of a buyers' market. Market milk and cream consumption has increased, even since 1942, and consumption of dairy products can be expected to rise to new peaks if quality is given primary consideration, if up-to-date protective packaging is practiced, and if the newer knowledge concerning the nutritive value of dairy products is effectively applied through education and proper advertising. Trends in markets and production indicate that the industry must take advantage of the newest technological developments and evaluate its methods of distribution, processing, and marketing.

Dehydration of Pears. A pear dehydration method that utilizes steam blanching prior to sulphuring and imparts superior texture and color to the product will be put into commercial practice in 1947. Blanched fruit loses its moisture quickly in the dehydrator. Steam-blanched pears require only 10 or 12 hr. of sulphuring as compared to 36 or 48 hr. for unblanched fruit. Only the best grade of flowers of sulphur can be burned successfully.

Sweetening from Fruits. Preparation of sweetening media from fruit, with incidental removal of impurities and color, is disclosed in a recent patent. Essential steps in the process result in the formation of a graunlar, easily washable and filterable precipitate, from which the sweetening medium can be separated by vacuum filtration.

HOSPITAL MANAGEMENT

Vol. 63, January, 1947

*How one hospital serves good food yet achieves major economies.—p. 94.

Vol. 63, February, 1947

*How University of Michigan Hospital administers its food service.—p. 92.

Vol. 63, March, 1947

*Army food services reorganized as result of war experiences.—p. 96.

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Hospital Food Economies. A hospital in Canada has inaugurated a new system of food service in an attempt to eliminate food waste. Such factors as careful buying, expert preparation of food, menus planned to avoid monotony, and cafeteria-style service have helped in the economy program. Using specially constructed food conveyers, each patient is allowed to select his own meal. Great savings have resulted and the patients are better satisfied.

Food Service at the University of Michigan Hospital. At the University of Michigan Hospital, the Department of Dietetics and Housekeeping is directed by Mable MacLachlan, who is the President of the American Dietetic Association. Under Miss MacLachlan's guidance a most effective organization, consisting of seventeen dietitians, twenty dietetic interns, and three hundred other personnel, has been developed. Descriptions of the physical plant, personnel policies, buying policies, the type of food service, and the work of the different dietitians explain how the department is able to meet its demands with such apparent ease.

Reorganization of Army Food Services. The need for standardized procedures of food procurement, storage, and distribution for Army hospitals and medical centers has been realized. The Hospital and Domestic Operations Division of the Office of the Surgeon General of the Army is establishing these standards. Procedures which are being emphasized include the planning of menus by the head dietitian and methods of ordering. Suggestions for handling various types of food are given, the inventory plan is explained, and the operation of the storeroom is described.

HOTEL MONTHLY

Vol. 55, February, 1947

*How new refrigeration facilities help to increase food business.—p. 31.
The dollar and cents value of analyzing hotel jobs.—p. 40.

Vol. 55, March, 1947

*How to set up a job analysis program for your hotel. J. R. Hundley, Jr.—p. 30.
*One way to balance high food costs.—p. 52.

New Refrigeration Facilities to Increase Food Business. Additional cold storage space was obtained at Hotel Manchester, Middletown, Ohio, by enlargement of a storage box and through more and larger individual reach-in boxes. Now it is possible to have adequate reserve food storage to meet unexpected demands. Included in the article is a description of the new cold storage plant.

Job Analysis Program. Sound hotel management and organization produced increased efficiency, larger profits, higher wages, better morale, and the ultimate goal—a smoothly-operating hotel organization. If an improved work organization is to be effected, the following are necessary: job description, job specification, job evaluation (grading), work simplification, operational needs chart, job schedule, and job card. Suggestions are given for developing aids to sound management.

One Way to Balance High Food Costs. Many coffee shop menus are still dominated with listings of scarce and high priced items. Managers interested in economical operation should analyze these items and turn to the materials that are in plentiful supply and low in price. It was decided to experiment with turkeys to find ways and means of preparing and serving them so as to take the pressure off high-priced scarce materials. Three qualifications of any dish that might be produced were: (a) It must be of such character as to be easily duplicated in the average busy coffee shop. (b) Any cost figures developed in the tests must be for fair, average amounts, arrived at by practical kitchen methods of handling turkeys. (c) The chef making the tests must have an open mind, and sufficient skill and time to devote to the work to insure a thorough job. The dishes to be prepared were divided into three categories: (a) those made from diced meat; (b) those made from sliced breast of turkey; and (c) dishes made from finely cut turkey meat. Dishes were also made up from the wings and the livers. A table is given showing just what was obtained from the two turkeys weighing 43 lb. as purchased, and costing 53 cents per pound delivered. For ease in figuring and knowing that exact figures are not always practical, 8 cents per ounce was used as the cost of the turkey meat in every case. Pictures are shown of four dishes with diced turkey meat as the main ingredient—two creamed and two *à la king* style. In no case was there over 2½ oz. of turkey meat used, which indicates the maximum cost of the main ingredient did not exceed 20 cents.

THE MODERN HOSPITAL

Vol. 68, January, 1947

*Frozen food industry, please note. D. H. Palmer.—p. 100.

Vol. 68, February, 1947

*Queen's is in the kitchen. V. M. Tochterman.—p. 45.
Dietetics has six markets. R. P. Sloan.—p. 100.

Vol. 68, March, 1947

*Ways to simplify the work. O. M. Thomas.—p. 108.

Suggestions to the Frozen Food Industry. Hospital dietitians have used frozen foods not only to increase the attractiveness and palatability of the meals served, but to decrease the labor required for preparation. However, many institutional directors are dissatisfied with the frozen products they are receiving. Vegetables, especially, are of poor quality. Although the Department of Agriculture has established criteria for judging frozen foods, its grading system has not been adopted. If the use of frozen foods is to continue to increase, the industry must take steps to improve the quality and maintain the superior nutritive value of its products, simplify and standardize containers, and give adequate instructions for handling and preparing frozen foods.

The Kitchen at Queen's Hospital. At the time of the Pearl Harbor disaster, the kitchen of Queen's Hospital, Honolulu, T. H., was operating beyond its recognized capacity. Equipment was outdated and quarters cramped. The need for a new kitchen was apparent, and arrangements had been made to build one. Although the war interfered, these arrangements were carried out in the best possible way, and the results have been very satisfactory. A description of the kitchen and its equipment is given, and a plan, drawn to scale, is included.

A "Sales" Program for Dietetics. This paper, presented at a Greater New York Dietetic Association meeting, emphasizes the need for acquainting the layman with the profession of dietetics. The general public does not realize its importance or wide scope. In order to "sell" the profession, the dietitian herself must be enthusiastic about the work and have faith in the profession, and good public relations must be developed. The article includes a discussion of methods by which the public can be made to appreciate dietitians and their work.

Ways to Simplify Work. By adapting the newer time and motion study methods to the institutional kitchen, information can be obtained which will aid in the proper selection and arrangement of equipment. The various methods of collecting data are described and the terminology used is explained. Emphasis is placed on *economy of motion*.

PROTEIN

And Peripheral Vascular Disease

That the intake of protein foods need not be curtailed in peripheral vascular disease is apparent from a recent clinical study.* In their investigation these authors favorably influenced peripheral blood flow by means of increased production of body heat resulting from the specific dynamic action of certain nutrients.

A powerful specific dynamic action is known to follow a protein meal, a reaction due to the effect of certain amino acids, predominantly glycine, alanine, phenylalanine and tyrosine. Utilizing this action of amino-acetic acid, these authors fed glycine to a small series of patients afflicted with peripheral vascular disease. They observed, in the majority of patients studied, a definite increase in peripheral blood flow, a concomitant of the augmented metabolic activity.

From these results, it appears that meat need not be denied patients with peripheral vascular disease, in the fear that the condition would be adversely affected.

—

*Grubner, R. D.; DiPalma, J. R., and Moore, E. Am. J. Med. Sc. *213*:46 (Jan.) 1947

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

AMERICAN MEAT INSTITUTE

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RESTAURANT MANAGEMENT

Vol. 60. March, 1947

*The NRA and higher sanitary standards. J. W. Ebersole.—p. 39.
*Basic principles of kitchen layout. A. W. Dana.—p. 43.
Planning a Chinese cuisine. R. K. Gidley.- p. 46.
Announcing a public relations forum. J. S. Warrent.—p. 48.
*Postwar dishwashing practices. W. O. Voegele.—p. 56.
*Niceties in quantity food preparation. A. Easton.—p. 58.

The NRA and Higher Sanitary Standards. It is the objective of the Sanitation Committee of the National Restaurant Association to develop a sound, uniform, standardized program of sanitation. Seven recommendations regarding sanitation, as presented to the Association's Board, are listed.

Kitchen Layout. This is the first of a series of articles on the fundamentals of modern kitchen planning. The proper kitchen layout must center around the frequent cooking of properly-timed batches of food. Some factors affecting the size of the kitchen are the extent of the menu, the amounts of food to be prepared at one time (remembering preparation for banquets), and the type of service. The placement of equipment and the choice of capacities needed requires a knowledge of food preparation and kitchen operation. A list of fifteen fundamental food service layout principles are given.

Postwar Dishwashing. One of the new dishwashers, with a length of 26 to 28 ft. and a capacity of 22,000 pieces per hour, has a new type conveyor belt. This belt has vertical pegs spaced so dishes are stacked on edge. It travels 8 ft. per minute. Three wash and rinse tanks are separated by 4-in. air spaces. An exhaust fan helps remove moisture on dishes, and the length of the belt on the discharge end allows time for self-draining and drying.

Niceties in Quantity Food Preparation. Shellfish, now being distributed to all parts of the country, require special handling and careful preparation. Methods of cooking and serving scallops, clams, oysters, and lobsters are given.

WHAT'S NEW IN HOME ECONOMICS

Vol. 11, March, 1947

*Adult food classes fitted to local needs. D. E. Shank.—p. 35.
A breakfast program for adults. D. E. Shank.—p. 36.
Field trips to study food processing. E. A. Wood.—p. 38.
Refrigeration keeps perishable foods fresh and safe.—p. 98.
Teaching refrigeration in home management classes.—p. 101.
Teaching refrigeration to food classes.—p. 102.
Care of the home refrigerator.—p. 104.
*Here, there and everywhere. W. S. Pendergast.—p. 133.
*A test kitchen for school lunchrooms. M. T. Kavanaugh.—p. 134.
Girls put their education to work. M. G. Phillips.—p. 147.
Citrus fruits—tomorrow and next day. C. B. Sherman.—p. 154.

Adult Food Classes. A home economics teacher organizing and taking charge of adult food classes must first study and understand the particular needs of the group. There are a number of factors which affect the success of the teaching program. These are pointed out as a guide to the instructor in planning courses which will prove valuable to the homemaker.

A Test Kitchen for School Lunchrooms. In Chicago, a test kitchen for school lunchroom operation was developed under the guidance of F. O. Washam. One of the school lunchroom kitchens was selected as a practical laboratory to help establish and maintain standardization. The two main objectives in establishing such a kitchen were: (a) to accomplish standardization of food service, whereby certain food standards are specifically established for school lunchroom operation, and constant help and assistance is given to maintain these standards, and (b) to provide a medium for education— education of the employees, of the students, and of their parents. The various activities carried on through this test kitchen are explained. The test kitchen is under the direction of Mary T. Kavanaugh.

Diet and Man's Tolerance to Cold

The possibility that human tolerance to cold may be affected by diet, particularly by the water-soluble vitamins, has been a matter of conjecture for many years. Recently a comprehensive study of the question has been reported by a group of investigators at the University of Illinois. Twelve healthy young men were used as subjects. Experiments were conducted for a period of 150 days to determine the effect of supplements of the water-soluble vitamins to a basal diet containing only borderline amounts of ascorbic acid, thiamine, riboflavin, and niacin on the ability of the subjects to withstand repeated exposure to cold. The exposure was of 8 hr. duration either to intense cold (−20°F.) with considerable protective clothing or to a cool environment (60°F.) with little protective clothing. The tolerance to cold was measured by changes in rectal and mean skin temperature and in the performance of a series of psychomotor, perceptual, and intellective tests. The supplementary vitamins were alternated with placebos indistinguishable from the vitamin capsules.

After eighty-nine days the subjects fed only the basal diet did not show evidence that the diet was inadequate for normal nutrition excepting that the plasma ascorbic acid level decreased to a low value (0.2 mg. per 100 cc.) and the excretion of thiamine in the urine was reduced to a level indicative of a borderline thiamine deficiency. A systematic study of the data secured from psychomotor, perceptual, and intellective tests failed to reveal any consistent evidence that the vitamin levels of the basal diet were inadequate. Nor was there any discernible effect on the tolerance to cold as measured by changes in rectal and mean skin temperature, the latter varying with environmental temperatures, as has been recently emphasized. The addition of the water-soluble vitamins was likewise without effect on the tolerance to cold as well as on the psychomotor, perceptual, and intellective tests.

These careful studies thus indicate clearly that the ability of man to withstand the damaging effects of repeated exposures to cold cannot be appreciably altered by giving excessive doses of ascorbic acid, thiamine, riboflavin, and nicotinic acid above the amounts required for apparently normal nutrition. The possibility that the water-soluble vitamins might show a favorable effect in subjects with definite avitaminosis, of course, is not answered by these experiments.—*From an editorial, J. A. M. A. 132: 716, 1946.*

ITS DELICIOUS TASTE

is appreciated by the bland diet patient

Successful dietary restriction is possible only when the prescribed diet provides sufficient gustatory appeal to avoid monotony and drabness. Experience has shown that most patients find it difficult to subsist on foods which are "colorless" and largely tasteless.

Malt-o-Meal, an enriched farinaceous wheat cereal flavored with toasted malt, adds attractiveness and taste appeal to any bland diet. Its unique and delicious taste is enjoyed by all patients, hence this cereal can be eaten daily or more often if necessary. Malt-o-Meal is bland and residue-free (fiber content 0.4%). It is applicable whenever a bland, easily digested cereal food is required, as in peptic ulcer, colitis, dysentery, esophageal stenosis, dysphagia. In addition to the basic nutrients provided by wheat, Malt-o-Meal supplies significant amounts of thiamine, riboflavin, niacin, and iron.

CAMPBELL CEREAL COMPANY, Minneapolis, Minn.

Malt-o-Meal

Malt-o-Meal, an enriched wheat cereal flavored with toasted malt, provides per ounce (dry weight), 0.29 mg. of thiamine, 0.13 mg. of riboflavin, 1.09 mg. of niacin, and 2.00 mg. of iron. Thus Malt-o-Meal provides appreciably more thiamine, riboflavin, and iron than does whole wheat, and 78% of the niacin content of whole wheat.

News Notes

Nutrition Foundation. In a five-year report of the work of the Nutrition Foundation, Inc., Dr. Charles Glen King, scientific director, reviewed research projects which have been carried on by Foundation grants. He pointed to a number of advances which have increased knowledge regarding diabetes, anemia, liver injury, maternal and infant feeding, bone healing, and the relation of food to the span of life.

Fifty-four industrial companies and corporations are now members of the Nutrition Foundation and have made contributions during the past five years for the support of the work of the Foundation totaling $2,749,800. Membership of the Foundation numbered fifteen companies in 1942.

Renewals have been made of eighteen grants, and nine new grants have been made to six universities and colleges to study the following problems: protein synthesis by use of tracer substances; biochemical conversion of carbohydrate to fat; absorption, deposition, and synthesis of the saturated fatty acids by the heavy hydrogen techniques; and the role of acetates in the synthesis of certain body constituents.

Dr. L. A. Maynard and associates at Cornell University have been given a grant to study a factor regulating calcium deposition in the arteries, joints, and muscles of guinea pigs. The scientific literature has carried reports of the production in guinea pigs of a characteristic wrist stiffness which cannot be cured by supplementing their diets with any of the known vitamins or other nutrients, but which was cured by a minute amount of concentrate from cane sugar, molasses, and raw cream.

A grant has also been made to Dr. F. J. Stare, Harvard University, to study the experimental production of arteriosclerosis, the effect of nutritional deficiencies upon the heart muscles, and to develop a test for choline deficiency suitable for clinical use. Dr. DeWitt Stetten, Jr., also from Harvard Medical School, will study aspects of sugar and fat metabolism, which will be carried out with the aid of isotopes. This work is of special interest to those dealing with diabetes.

Applications for Commissions in the Army. Now that the bill giving permanent rank for dietitians in the Army has become law, the JOURNAL is glad to list requirements for appointments. They are: "An applicant must have passed the age of twenty-one, be a female citizen of the U.S., have served honorably on active duty at any time since 7 December 1941 as a commissioned officer in the Army of the U. S. as a dietitian. She must be unmarried and have no dependents under fourteen years of age."

Other terms of the law state that initial appointments will be made in the grades of second lieutenant, first lieutenant, and captain. An applicant who has less than three years constructive or active federal military service, whichever is greater, will be appointed as second lieutenant. Applicants with over three years, but less than ten years service, will be appointed as first lieutenants, and those with more than ten years of constructive service will be appointed in the grade of captain.

Dietitians who are members of the Women's Medical Specialist Corps may be retired at the age of fifty, with a retirement allowance of 2½ per cent of their base and longevity pay multiplied by their years of service. They may, if they wish, elect to retire after twenty years of service, regardless of age. Also, regardless of years of service, dietitians below the grade of major may be retired at the age of fifty, while those in the grade of major may be retired at fifty-five.

A Reserve Corps will also be established. Additional personnel needed over and above the total minimum authorized strength for the Regular Army will be met by the appointment of qualified Reserve dietitians, who, with their consent, will serve on extended active duty for such time as may be determined by the Secretary of War. Appointments, which will be made in the grades of second lieutenant through captain, will be open to dietitians twenty-one to forty-four years of age. Those dietitians who were appointed after 22 June, 1944, and were honorably separated thereafter, may, if otherwise qualified, be appointed in the highest grade held on active service before reporting to a separation center. Appointment in the Reserve Corps will be for a period of five years, with privilege of renewal.

Application blanks may be obtained from the Office of the Surgeon General, U. S. Army, or from the American Dietetic Association.

Institute on Hospital Dietary Department. An Institute on Organization and Operation of a Hospital Dietary Department, sponsored by the American Hospital Association, will be held from June 23 to 27 at the University of Michigan, Ann Arbor. Lectures have been planned to deal with the principles of organization and management as applied to the food service department; personnel relations; food control and accounting; purchasing; and advances in diet therapy. Films and exhibit material for use in training personnel will be shown, and a consultation service on individual problems will be provided.

Other institutes planned by the American Hospital Association are: medical record librarians, June 9 to 13, in Denver; public relations, June 9 to 13, in Princeton, New Jersey; theory and practice of cost analysis, July 21 to 25, in Bloomington, Indiana; personnel management, August 4 to 9, in Cleveland; hospital planning, August 18 to 22, in Chicago; basic accounting, October 20 to 24, in Asheville, North Carolina; and hospital trustees, December 1 to 5, in Chicago.

Short Course on Management Controls. The third Short Course of the National Restaurant Association will be held at International House, University of Chicago, June 16 to 18. The subject will be "Management Controls," with some of the topics to be covered as follows: controls effective through organization and policies, budgeting, portion control, costs, purchasing, storage, quality and quantity of food production, labor, and sanitation. The number permitted to attend will be limited to 150. Room accommodations may be obtained at International House. An enrollment fee of $10 will be charged. Those interested are urged to write to Dr. Charles A. Rovetta, director, Restaurant Administration Program, School of Business, University of Chicago, Chicago 37, Illinois.

New Surgeon General. President Truman on April 24

See What the LEADER Gives You

—in cooking top construction

No other commercial range gives you *"front firing"*—the feature *desired by all chefs!* Burners located *across the front* of the cooking top direct flame upward and toward the back of the top. *Highest temperatures thus are generated at the front, graduating to lower temperatures at the back.* So after quick boiling at the front, vessels can be moved to the back for a continuation of cooking, *leaving front available for other work.*

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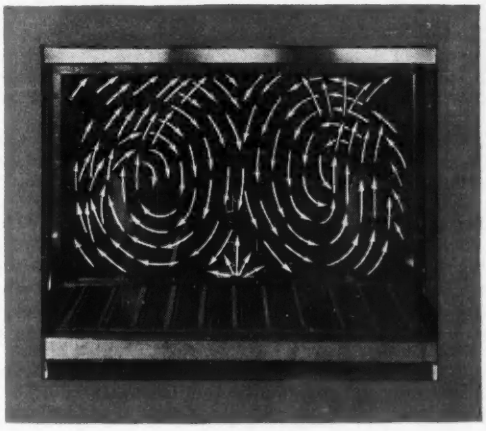

—in oven construction

Garland's long-standing reputation for baking and roasting comes from research and engineering which have *eliminated "hot" and "cold" spots.* You get *even heat distribution.* You can roast or bake in any part of the oven, *without turning of pans or roasters.* High quality *insulation—enameled linings* and smooth-operating *adjustable racks* please all chefs. Standard equipment includes *automatic oven heat control.*

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Heavy Duty Ranges • Restaurant Ranges • Broilers • Deep Fat Fryers • Toasters
Roasting Ovens • Griddles • All Types of Commercial Cooking Equipment

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nominated Brigadier General Raymond W. Bliss to be surgeon general of the Army, with a rank of major general. General Bliss will succeed Major General Norman T. Kirk whose term expired on May 31.

Bread and Flour Enrichment, 1946–47. The Committee on Cereals of the Food and Nutrition Board of the National Research Council has released a new pamphlet as of February, 1947.

The series of changes which have been disturbing to the stabilization of the practice of enrichment of bread and flour have been considered, including the 85 per cent extraction provision of War Food Order #144, and the return to white flour that resulted with the cessation of War Food Order #1.

On the other hand, a factor which has operated to stabilize the practice of enrichment has been the progress of legislation. Six states adopted such legislation prior to 1945, thirteen additional states enacted such measures since 1945.

Support for further legislation has been given by the American Public Health Association, American Medical Association, and the Association of State and Territorial Health Officers. Opposition has come from several sources, and many of the arguments used are misstatements of facts made to appeal to prejudice. In order that effective consideration be given to these arguments, a presentation is given of the points used to advance the opposition to enrichment legislation, followed by pertinent facts which can be used to answer these arguments.

Rice Study Group. A Rice Study Group, composed of representatives of the major rice-producing and consuming countries of the world met under the auspices of FAO in May in India. The eight members of the United Nations which were invited to send experts were: China, France (for Indo-China), India, the Netherlands (for Java and the East Indies), Siam, the Philippines, the United Kingdom (for Burma, Ceylon, and Malaya), and the United States (for Japan and Korea). The study group concerned itself with both the technical problems relating to expansion of production and those dealing with economic problems, such as improvement of rice marketing, stabilization of rice prices, establishment of famine and other reserves, and coordination of national policies relating to production, distribution, and consumption of this staple food for half of the world's population concentrated in South and East Asia.

The group will prepare a report which will be submitted to the interested member governments and will form the basis for an International Rice Conference to be held later.

English Publication. With the Spring, 1947, issue, *Nutrition, Dietetics, and Catering* made its bow. It is an independent quarterly review incorporating official news of the British Dietetic Association and of the Food Education Society. The first issue includes an article describing the training course in dietetics given at the General Infirmary at Leeds; a refresher course in dietetics; a model syllabus of a course of study for a degree in dietetics; a scheme for a diploma course in dietetics; and suggested salary scales for hospital dietitians, as well as several other articles of nutritional interest.

Federation Meeting. The 31st annual meeting of the Federation of American Societies for Experimental Biology was held in Chicago, May 18 to 22. Approximately 1000 papers were presented to more than 4000 scientists attending the meeting. Programs were conducted by the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics, the American Society for Experimental Pathology, the American Institute of Nutrition, and the American Association of Immunologists.

Drs. V. A. Drill and A. P. Truant, Yale University School of Medicine, reported that the thyroid gland is necessary, at least in the rat, for the proper utilization of carotene in the diet. Their findings are of particular interest because they explain the observations of other doctors that patients with poor thyroid function have more carotene in their blood than normal individuals. When such patients are given thyroid medication, the excess of carotene in the blood declines to normal values.

Drs. George H. Hitchings and E. A. Falco described the new kind of relationship between diet and disease which was demonstrated when it was found that mice eating a mixture of crude foodstuffs are much more susceptible to infection by pneumonia germs than are mice eating a highly refined diet. The susceptibility to pneumococcal infection can be demonstrated in several foods, such as peanuts, navy beans, oats, and wheat. The substance could not be found in liver, yeast, cornmeal, or milk powder. Since this kind of effect has been demonstrated so far only in pneumonia in mice, it is not yet known how widely such effects may occur, nor whether or not similar relationships between diet and disease may apply to human beings.

Dr. Paul Cannon and workers of the Department of Pathology, University of Chicago, discussed the influence of time of ingestion of essential amino acids upon utilization in tissue synthesis. When rats were fed diets adequate in calories, vitamins, and minerals but containing only the ten essential amino acids, they recovered lost weight rapidly. If, however, they were fed similar diets in which the ten essential amino acids were not given at the same time but at alternating intervals so that at one time five were eaten and an hour later the other five were eaten, the animals failed to recover lost weight. The experiments demonstrate, therefore, that the tissues require an ample supply of all of these amino acids for their most efficient utilization and that they are not stored for even short intervals. They must be supplied at each meal.

Dr. Julia O. Holmes of the Massachusetts Agricultural Experiment Station reported the effect of diet on dental caries. When rats were fed a diet of coarsely ground corn, whole milk powder, dried alfalfa, and salt, caries was rampant. The best protection to the teeth was afforded by foods which are rich in protein. Similar studies emphasizing the importance of milk were reported by Professors C. A. Elvehjem and P. H. Phillips and their associates at the University of Wisconsin. These workers found that cotton rats fed on milk were completely free of carious lesions. The addition of milk to diets which ordinarily produce dental caries protected the teeth of the animals.

Many other outstanding papers were presented on vitamins, proteins, and fats and their interrelationships. Abstracts from all papers presented at the meetings may be found in the *Federation Proceedings*.

Tourist Conference. A two-day meeting sponsored by the Bureau of Business Research and the Department of Adult Education of the University of Washington was held April 17 and 18 in Seattle for the purpose of furthering tourist trade in the State of Washington. One session of this Tourist Conference was devoted to the relation of restaurants and resort dining rooms to the tourist industry. Margaret E. Terrell, director of the University Food Service and Professional Education Section Chairman of A.D.A., was chairman of this meeting. Topics discussed were: "Attracting Tourists Through Good Eating Facilities"; "Trends in the Restaurant Industry"; and "The Personality Appeal in Food Service." Other sessions were devoted to hotel, motor court, and resort management; promotion and advertising; highways; nature's attractions for the tourist and the part the government plays in encouraging travel; and tourist potentials in the Pacific Northwest.

Participants in the food panel were Elston Ireland of Ireland's Restaurants, Portland, Oregon; Walter F. Clark, outgoing president of the National Restaurant Association; John A. Carey of the Washington State Restaurant Associa-

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Save hours by using B-V

For a royal treat . . . for real French onion soup that is made without long hours devoted to making meat stock —use this recipe. B-V makes the deliciously rich meat stock in a matter of seconds.

B-V FRENCH ONION SOUP

INGREDIENTS	4 SERVINGS	25 SERVINGS	100 SERVINGS
Onions, sliced thin..... or Dehydrated onions	⅔ lb. ⅔ cup	4 lbs. 2 oz. 1 quart	16½ lbs. 1 gallon
Bacon fat or lard.....	3 tbsp.	½ lb.	2 lbs.
Hot water.....	5½ cups	7½ qts.	6¾ gallons
Wilson's B-V.....	4 tsp.	6¼ oz. (½ cup)	1 lb. 9 oz. (2 cups)
Salt.....	dash	1⅔ tbsp.	6 tbsp.
Pepper.....	dash	as desired	as desired
Slices of hard rolls.....	4	25	100
Grated cheese, dry.....	3 tbsp.	½ to 1 cup	2 to 4 cups
Volume.....	1 quart	6¼ quarts	6¼ gallons

METHOD: Heat onions in fat over low heat until tender and lightly browned, stirring to cook evenly. (If dehydrated onions are used, add them and the fat to water without browning onions.) Add water and B-V which has been dissolved in a small amount of hot water. Cover and simmer about 1 hour. Add salt and pepper as desired. Serve with sliced hard rolls (toasted dry) floating on top. Sprinkle with cheese.
Size of serving: 8 oz. *Approximate cost of serving: 3 cents*

NUTRITIVE VALUE OF B-V

Wilson's B-V is a delicious blend of concentrated meat extract and selected vegetable flavors. It adds valuable nutrients to the diet.

One teaspoon of B-V, the amount used to make a cup of broth, furnished 27% of the day's requirements of iron, 74% of the riboflavin, 26% of the niacin, and 8½% of the thiamine, based on amounts recommended by the National Research Council for a sedentary woman weighing 56 kg.

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A set of expertly prepared and tested B-V "large quantity" recipes for institutional use.

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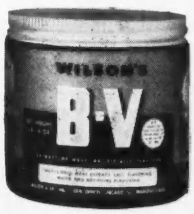

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For economical, institutional use, Wilson's B-V is available in the large 20 oz. "Big Boy" jar. Use it for making large quantities of delicious gravy —for flavoring stews and casseroles— for soups, bouillons, hot drinks, etc.

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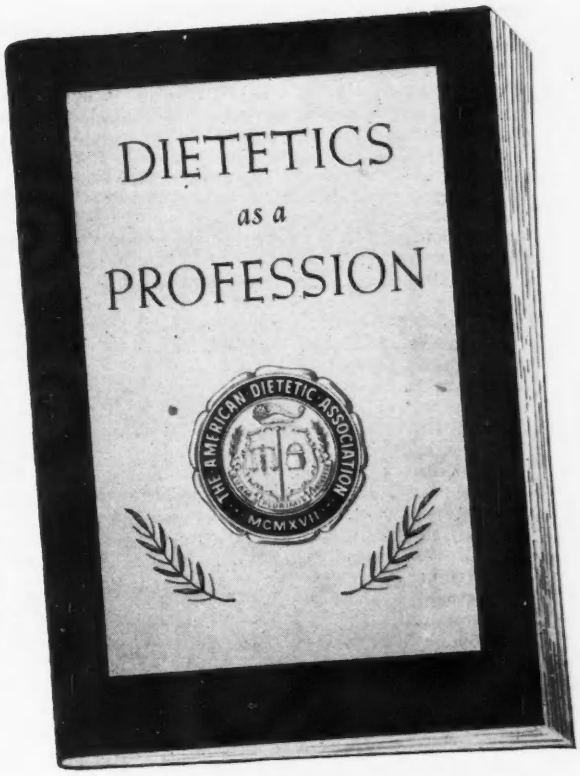

[SECOND EDITION]

Revised and Illustrated

DIETETICS *as a* PROFESSION was written primarily as vocational guidance material. This brochure is effectively illustrated with photographs and drawings . . . as well as artistic touches of color to portray for the high school and college student the profession of dietetics. Copies are available at 25 cents each from the office of the

AMERICAN DIETETIC ASSOCIATION
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CHICAGO 11, ILLINOIS

tions; and Grace E. Olson, assistant director, University Food Service, University of Washington.

School Lunch Publication. The Bureau of Human Nutrition and Home Economics of the Department of Agriculture has released a new booklet, *Estimating the Cost of Food for a School Lunch*. In it is stressed the importance of keeping on firm ground regarding food expenditures. A school starting a program needs to estimate carefully what food costs will be, and a school with an established program must keep informed about its actual food costs and whether the money is buying the kinds of food the children need. Food need not be expensive to be adequate. In fact, the booklet points out that expensive food may be responsible for two unfortunate conditions—a high lunch charge which some children cannot afford to pay and depletion of funds so that for part of the year there will be no school lunch.

To show how food cost estimates may be made, the handbook presents a worksheet with instructions for estimating the cost of food for a sample week's lunches. Instructions are also given for computing actual food costs two ways—by inventory and by the recipe method. The handbook is available free of charge on request to the Bureau of Human Nutrition and Home Economics.

Consolidation of Home Economics Publications. An announcement has been made that the magazine, *Practical Home Economics*, has bought *Better Food*, and that beginning with the June issue will incorporate *Better Food* in its editorial scope. Thus *Better Food* passes from existence as an individual entity.

Syracuse University Institute in Public Health Nutrition. A program of the Institute to be conducted July 7 to 19 by the College of Home Economics has been received in the JOURNAL office. The first week will be devoted to Community Problems and the second week to Methods and Tools for Community Education in Nutrition.

During the first week discussion will center around: the relationship of federal and state agencies to the local nutrition program; surveys of community needs; agency relationships; community needs, both of the adult population and of children; and arousing community interest and action.

The last half of the Institute will cover: the group and individual approaches; the use of materials; and a presentation of individual projects.

This course will carry two points of University credit and the number of participants will be limited. Cost for the two-week period, including registration, room, and board, is $60. Arrangements can be made for field participation, with additional credit, if desired, during the two weeks following the Institute.

Food Show and Nutrition Institute, Tuskegee Institute. "Better Nutrition for National Welfare" was the theme of the second annual Food Show and Nutrition Institute held at Tuskegee Institute, April 17 to 19. This year's attendance included guests from more than twenty states, twenty cities in Alabama, and one guest from Vancouver, British Columbia.

The Food Show was sponsored by the Department of Commercial Dietetics, while the Nutrition Institute was carried out by the School of Home Economics.

An impressive display was set up by students in the Department of Commercial Dietetics as part of the Food Show. It featured southern dishes, particularly those which made use of the work of Dr. George Washington Carver, such as sweet potato and peanut dishes.

As part of the Food Preparation Work Shop, a number of successful head waiters and chefs gave talks and demonstrations. They included O. J. Duffin, supervising chef of the Atlantic Coast Line Railroad; Eugene Stannard, supervising instructor of waiters, Pennsylvania Railroad; J. H. Williams, traveling chef of the New York Central. Horace Moran, chef of the Hotel Monson, St. Augustine, Florida, represented the hotel field, and chefs from air lines and large food companies were also present. All concurred that the ceiling in food work is set by the training received and by the individual's willingness to work. All also praised the work done by such schools as Tuskegee Institute, and feel that through such training better standards of living and higher wages for the youth of the country can be achieved.

Also on the program of the Food Show was Eduard Panchard, one of the original founders of the international society of epicures, "Des Amis d'Escoffier," and consulting chef for the H. J. Heinz Company.

Alberta Macfarlane, educational director, National Restaurant Association, Chicago, and Robert J. Wilson, secretary, Washington, D.C., Restaurant Association, emphasized the importance of sanitation in commercial food preparation and service.

Ophelia Pearson, dean, School of Home Economics, Tuskegee Institute, served as chairman of the Nutrition Institute and with the cooperation of the foods faculty, planned this phase of the program. Mabel Evans served as co-chairman and coordinator.

The Nutrition Institute was opened with an inspection of the nutrition exhibits which had been set up by students. The exhibits covered the following topics: feeding for health with foods native to Alabama; food conservation; nutrition in industry; school lunches; special diets; water cress recipes; correlated skills in the industrial arts; and nutrition literature for reference.

Topics covered in the nutrition exhibits were also treated in the talks and panel discussions. "Child Feeding" was discussed by Dr. Genevieve Stearns, University of Iowa. She emphasized the necessity of continuous good feeding throughout childhood as the best insurance for growth. From experiments Dr. Stearns has supervised, she concludes that more attention needs to be given to the inclusion of enough protein-rich foods in children's meals.

"Better Nutrition for Industrial Workers" was the topic of a panel presented by Zella Coleman, director, Home Management House, Tuskegee Institute, and six of her students. The student members of the panel discussed: adequate home meals using the Basic Seven food guide; box lunches; restaurant meals for industrial workers; the snack wagon; and educational techniques and exhibits which encourage better food selection.

Laura Daly of the Extension Service, Tuskegee Institute, discussed "Better Nutrition for Farmers." Mrs. Daly reported that, in spite of the fact that it is usually difficult to change food habits, the farm population in Macon County is eating better than before the war. She attributes this to the fact that the draft figures called attention to the need for better nutrition. Vegetable gardens which farmers cultivated during the war and recipes taught by extension workers showing how to prepare foods available on the farm, have encouraged farmers to eat foods formerly lacking in their dietaries.

Another talk was that of Dr. E. Neige Todhunter, head, Department of Nutrition, University of Alabama, whose topic was "Recent Developments in Nutrition Research." Because of the vastness of the field, Dr. Todhunter confined her remarks to the new and extended list of functions of proteins.

The school lunch panel was introduced by Katherine Connelly Wisely, nutritionist and supervisor of the School Lunch Program, New York City Area Office for Marketing, Department of Agriculture. Members of the panel were: K. B. Young, principal, Tuskegee Institute High School; Mrs. M. K. Frazier, principal, Washington Public School, Tuskegee, Alabama; Alice M. Smith, supervisor, School Lunch Program, Spartanburg County, South Carolina; Evelyn James, instructor in foods and nutrition, Tuskegee

FACTS for doctors and dietitians on special diets in which the use of an enriched, easily prepared cereal of high nutritive value is indicated.

Is there an ideal cereal for bland diets?

Enriched 5 Minute "Cream of Wheat's" desirable combination of high nutritive values and low crude fiber content makes it particularly useful in diets for spastic colitis, peptic ulcers and other digestive disorders. In the past, many diets of this type were grossly deficient in Iron. Enriched 5 Minute "Cream of Wheat" provides a rich source of available Iron, and contributes other important nutrients. Crude fiber content is only one part in 200.

IRON. An average serving of Enriched 5 Minute "Cream of Wheat" (two level tablespoons dry weight—20 grams) supplies 83% of the recommended daily minimum requirement of Iron for adults.

VITAMIN B_1. An average serving of Enriched 5 Minute "Cream of Wheat" (two level tablespoons dry weight—20 grams) provides 10% of the recommended daily minimum requirement of Thiamine for adults. The cereal also supplies .375 mg. Niacin Vitamin per ounce (dry weight).

CALCIUM: PHOSPHORUS. An average serving of Enriched 5 Minute "Cream of Wheat" (two level tablespoons dry weight—20 grams) supplies 12% of the recommended daily minimum requirement of Calcium for adults, and 14% of the daily minimum requirement of Phosphorus for adults.

THOROUGHLY DIGESTIBLE. Enriched 5 Minute "Cream of Wheat" cooks to complete digestibility after only 5 minutes of boiling.

During the research leading to the development of Enriched 5 Minute "Cream of Wheat" it was found that the rate of cooking depends largely on the p^H of the cooking water. Through addition of the enriching mineral mixture, it has been possible to raise the p^H of the cooking water and greatly accelerate the speed with which the starch cells break down during the cooking process.

NOTE. For free booklet on use of Enriched 5 Minute "Cream of Wheat" in infant feeding, diets for expectant mothers, diets for the aged and bland diets, plus free sample package of the cereal (4-6 servings), write: The Cream of Wheat Corporation, 722 Stinson Boulevard, Minneapolis 13, Minnesota.

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Institute, and Dr. May Lyons, school lunch specialist, University of Alabama.

Mr. Young outlined some of the administrative phases of the school lunch program to which principals must give attention, while Mrs. Frazier cited problems in which community cooperation must be enlisted. Mrs. Smith presented the school lunch picture on a county basis, and Miss James described the regular course in school lunch problems which she teaches at Tuskegee. In this course, students are assigned to assist in different capacities in the school lunch program in schools near Tuskegee Institute. Class discussions are based on what to expect and how to meet the problems which arise in carrying out a school lunch program. Dr. Lyons stressed the need for maintaining high standards of sanitation.—*Katherine Connelly Wisely.*

Veterans Administration Nutrition Clinic. With the appointment on February 24 of Martha F. Trulson as chief nutritionist, the Regional Office in Chicago, Illinois, became the first in Veterans Administration Branch No. 7 to employ a full-time clinic dietitian. Miss Trulson holds a masters degree in public health from Harvard University and served as chief dietitian, 13th General Hospital, from November, 1942, until February, 1946. She has been assigned to the Out-Patient Service, Treatment Unit of the Regional Office. Approximately 4500 veterans with service-connected disabilities visit this unit every month.

The dietitian is directly responsible to the chief of the Out-Patient Service Treatment Unit, and will aid considerably in the care of ambulatory patients in need of nutritional guidance. She will also act as a nutrition consultant to the Sub-Regional Offices of Branch No. 7. It is anticipated that as the work progresses, the dietitians assigned to the Branch area who desire training in Out-Patient Service may obtain it in the Treatment Unit of the Chicago Regional Office.

A.D.A. Members Honored. On April 17 ten outstanding women in the field of home economics were honored at the University of Illinois, among whom was Adeline Wood, former Food Administration Section Chairman of the Association and member of the nominating committee. The occasion was the annual Bevier Memorial Lecture. The speaker this year was Frances Swain.

Recognition was also bestowed upon A.D.A. members at the celebration on May 2 and 3 of the fiftieth anniversary of home economics at Michigan State College, East Lansing. At that time Mable MacLachlan, Quindara Oliver Dodge, Mary Harrington, Thelma Porter, and Elda Robb were among twelve alumnae cited for outstanding achievements in their particular fields. It is interesting that Miss MacLachlan, Mrs. Dodge, and Miss Harrington were all in the same class. Miss MacLachlan is President of the American Dietetic Association and has also served as President-elect and Treasurer. Mrs. Dodge is past President of the Association, and Miss Harrington has acted as Vice-president, Professional Education Section Chairman, and Diet Therapy Section Chairman. Dr. Porter has contributed a number of papers to the pages of the JOURNAL, and Dr. Robb has served as chairman of committees for the Association and as president of the Massachusetts Dietetic Association.

Past President Talks to Southern Group. One of the addresses at the 19th annual meeting of the Southern Association of College and University Business Officers held in Gulfport, Mississippi, on April 18 and 19 was that of Anna M. Tracy, Florida State College for Women, Tallahassee. She spoke on "Management and Cost Control of College Food Services."

Miss Tracy, a past president of A.D.A., is also active in the promoting of the citrus fruit industry of Florida and earlier talked at a meeting in New York City held for the press. In her address she suggested the use of tangerine and satsuma juice, both of which are unknown to most people, although they belong to the citrus fruit family. This meeting and some of Miss Tracy's remarks were later written up in *Liberty* magazine.

Career Booklet on Home Economics. A revised edition of *Creative Careers in Home Economics* by Hazel T. Craig was recently released by the magazine, *Practical Home Economics*. A thirty-two-page booklet, it covers homemaking as a career and opportunities in textiles and clothing, food and nutrition, social work and child development, housing and equipment, consumer education and family economics, journalism, research, and government service. Two pages discuss qualifications for specific careers in teaching, business, institution management or hospital administration, journalism, research, and social service. A comprehensive bibliography lists books, pamphlets, and magazine articles dealing with home economics careers. This booklet, which sells for 40 cents, should be helpful in recruiting girls to enter the field of home economics. However, more detailed information, such as *Dietetics as a Profession*, should be used in pointing up the opportunities in the more specialized field of dietetics.

Railroads Study Food Service Problems. The New York Railroad Club devoted its April meeting to a discussion of food service, emphasizing developments in electronic cooking. Speakers for the evening included E. D. Campbell, vice-president in charge of engineering, American Car and Foundry Company; Owen Webber, president, Owen Webber, Inc.; A. E. Welch, manager, Radarange Division, Raytheon Manufacturing Company; and Carl Kolb, vice-president, *Quick Frozen Foods* magazine. Mr. Welch discussed the evolution of the use of electronic energy for cooking and demonstrated the Radarange, while Mr. Webber dealt with the facilities needed in the galley of a dining car equipped to handle frozen foods and to cook electronically. Mr. Campbell presented layouts and plans for such a dining car galley and discussed the recent revisions in the *Sanitation Manual for Land and Air Conveyances* issued by the U. S. Public Health Service. Mr. Kolb spoke on the problems involved in developing frozen pre-cooked foods. An interesting account of this meeting was later published in the trade journal, *Railway Age*, including summaries of the speeches.

Formula Room Procedure. A report has recently been received at the Association office from Eloise Ross, Department of Dietetics, Barnes Hospital, St. Louis, regarding the improvements in formula room techniques made during the past six months at St. Louis Maternity Hospital. In preparing formulas for newborn infants, the method of using surgically clean technique, applying the nipples and protective covering, and final autoclaving has replaced the water sterilization method. The transfer of the supervision of the formula room from the nursing department to the dietary department was made September 16, 1946. The report will be available for loan through the Association library to any member desirous of this information.

Booklet on Odors. The Hospital Bureau of Standards and Supplies has issued a twelve-page booklet titled *The Problem of Odors in Institutions*. Written by Dewey H. Palmer, it lists the various commercial deodorants on the market and gives a short evaluation as to the effectiveness of each one.

Relation of Soil to Diet. Results of a study of families living on poor and good soil in the South was recently reported by Olive Sheets of the Mississippi Experiment Station. *Food and Home Notes* says that records were kept of the menus served by 125 white families for two days at three different seasons of the year. The families living on poor soil served less milk, meat, and eggs than those on the better soil. The conclusion was reached that "The poor nutritive conditions found among rural people living in poor soil areas seem to be directly related to the unproductivity of the soil and the resulting poverty of the people. The people do not produce enough food of the right kinds for an adequate

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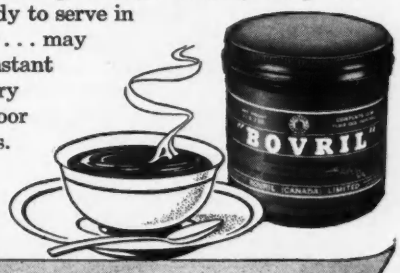

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diet, and because of low incomes, they do not purchase it." Miss Sheets also points out that many studies of the diets of rural people show that low- or very-low-income families have deficient diets, and some show also that the physical condition of these families is related to their poor diets.

New Produce Manual. The Equipment Department of Fruit Dispatch Company has recently issued a new publication, *Produce Manual*. Although intended to instruct the produce wholesaler, it will be of help both to the food buyer and the person teaching the principles of food purchasing. It is well illustrated with clear photographs and describes in clear, concise terms various distinguishing features of good and bad produce. It is available for quantity distribution at a cost of 15 cents per copy in quantities of 10 to 100 copies from John H. Murcott, 112 Farmers Blvd., St. Albans 12, New York.

Course in How to Brew Tea. As part of a twenty-two-week course for graduate training in military subsistence conducted by the Quartermaster Food and Container Institute in Chicago, Oscar Gorenflo and Walter Hellyer conducted a program dealing with tea. The need was felt because the armed forces are composed of a representative cross section of the population, which is drinking increasingly more tea. Mr. Gorenflo is director of public service, Tea Bureau, Inc., and Mr. Hellyer is president of Hellyer and Company and a member of the U. S. Board of Tea Experts. The course stressed the importance of protecting tea from contaminating odors, the necessity of avoiding dampness and rough handling, and methods of tea preparation.

Mr. Gorenflo demonstrated a "multipot" used by the English in garrison feeding and canteens. It is a 4½-gal., stainless steel pot with a stainless steel infuser. To make tea, $6\frac{4}{10}$ oz. of tea are put into the infuser and lowered into the multipot. Then 4½ gal. of boiling water are poured over the tea. After steeping exactly 10 min. the infuser is removed.

It was pointed out that only three types of equipment are satisfactory if good tea is to be made—stoneware, glass-lined equipment, and stainless steel, in the order of their desirability. Equipment used for making tea should not be used for any other purpose.

The use of a tea concentrate for iced tea was also discussed. To make the concentrate, 1½ gal. of water and 1 lb. of tea are used to make 1 gal. of concentrate. Steeping should be exactly 10 min. Shortly after the concentrate is ready, 9 gal. of water at room temperature must be added. Causes for clouding of iced tea are the too-rapid cooling of the concentrate by pouring it over ice or putting ice in it, or the cooling of the concentrate to room temperature over a period of hours. However, if the concentrate does become cloudy, it may be remedied by putting over a fire until it reaches 130–135° F. After that, water approximately at room temperature should be added. It was also stressed that in making iced tea, the ice should be placed in the glasses rather than in the pitcher.

A survey by the Tea Bureau has shown that hot tea is almost never used in the South, but that iced tea is very popular; that New Englanders almost all drink tea; and that people living in the Middle West and West may or may not drink tea. The survey also indicated that the use of tea increases with the income level of the population.

American Dry Milk Institute Meeting. At the 22nd annual meeting of the American Dry Milk Institute held in Chicago in April, Dr. E. W. McHenry, professor of public health nutrition, University of Toronto, cited the British scientific food planning during the war to show that plain food, if properly used, can produce good health without the use of extra vitamins. He also discouraged the use of sweet foods to satisfy hunger, stating that they lessen the use of essential foods such as milk, eggs, meat, fruit, and vegetables, and that low-income families often waste money by buying sweet foods rather than the more nutritive foods.

At the same meeting, Dr. Tom D. Spies gave a progress report on the feeding of seventy-two malnourished children at the Nutrition Clinic of Hillman Hospital, Birmingham, Alabama. The research work now in its second year features a diet of non-fat, dry milk solids and dry whole milk.

The use of non-fat, dry milk solids in the School Lunch Program was also discussed. Margaret Morris of the Department of Agriculture told of an experiment in feeding these solids in beverage form in the school lunch program in the South. As a result of these experiments, the use of non-fat, dry milk solids will be extended to nearly seven hundred southern schools, where many children normally drink no milk at all. In addition, large quantities of milk solids are being used for cooking of school lunches, Mrs. Morris reported.

Beatrice Donaldson, Iowa State College, also explained how non-fat, dry milk solids can be used to improve foods prepared in large quantities for serving in institutions, hotels, and restaurants.

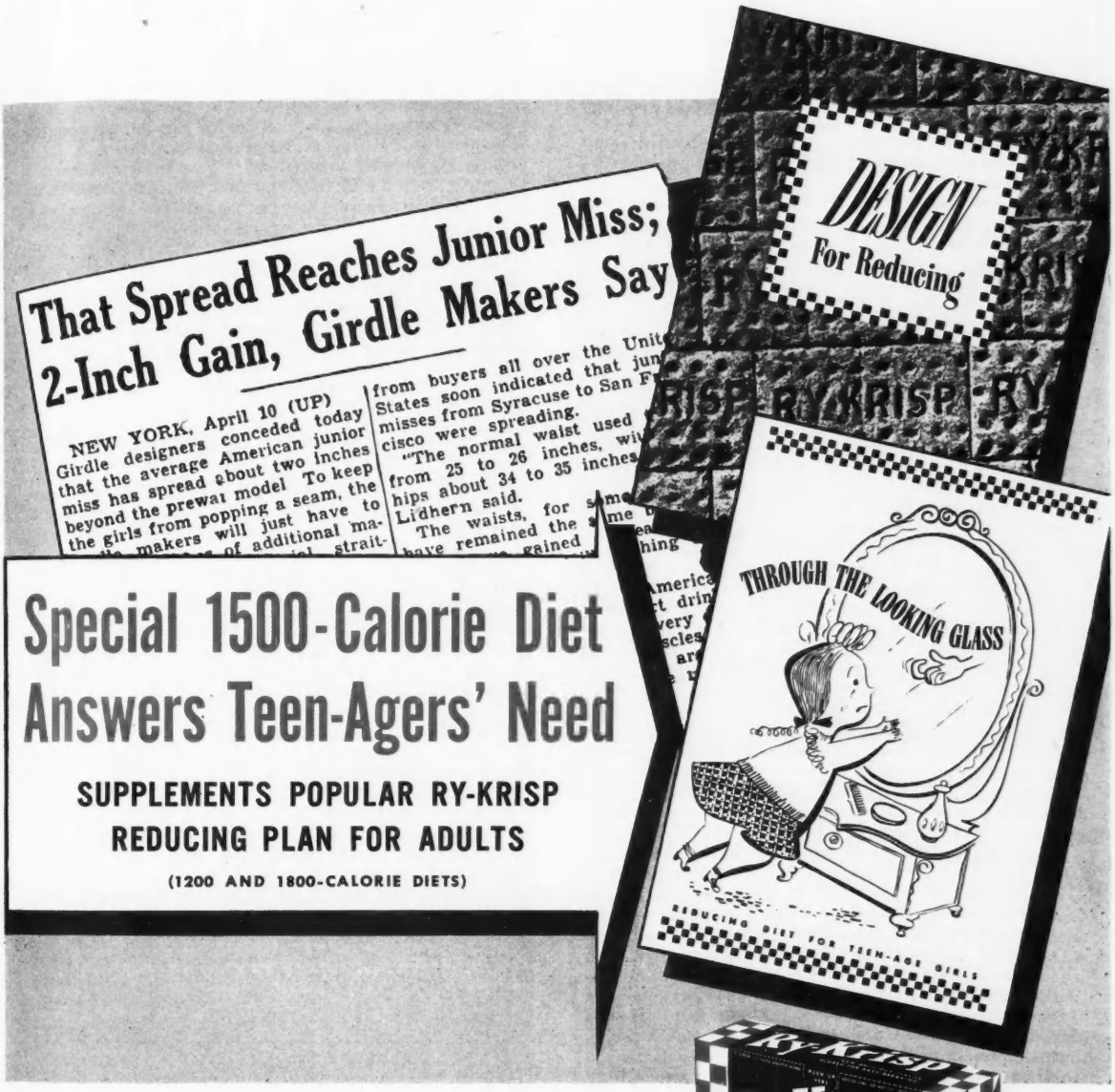
Passano Foundation Award for 1947. Announcement has been made of the selection of Dr. Selman A. Waksman, microbiologist at the New Jersey Agricultural Experiment Station, New Brunswick, as the recipient of the Passano Foundation Award for 1947. The award carries with it an honorarium of $5000. Dr. Waksman received the award for his original research in the field of anti-biotics, which resulted in his discovery of streptomycin in 1945 and of "grisein" this year. The Passano Foundation was established in 1943 by The Williams and Wilkins Company, medical publishers of Baltimore, to encourage medical research, especially that which has clinical application.

Manufacture of Fruit Essences. Five companies are now manufacturing for sale various fruit essences. They make use of a process developed by the Eastern Regional Research Laboratory of the Department of Agriculture in Philadelphia. Thirteen other companies are using the process for making flavorings for their own products. The process has already been applied to apples, grapes, pineapple, oranges, peaches, and cherries, and experiments are being made to adapt it to strawberries, blackberries, and apricots. An additional thirty-five companies have reported plans to make fruit essence as soon as equipment is obtainable. These essences are used for adding flavor to a variety of products, such as beverages, sirups, ices, confections, jellies, preserves, sauces, gelatin desserts, and pharmaceuticals. As yet, no fruit essences are being sold in small bottles for home use.

Army Personnel to Be Trained in Hotel Food Operations. Ten hotels and restaurants have been selected to give training to Army personnel in civilian food service practices, so that Army methods can be improved. Among the cooperating institutions are the Palmer House, Chicago, and the Hotel New Yorker, New York City. Officers who receive this training will spend 1056 hr. in practical training in catering, food service management, and food preparation, in addition to book work and conferences. They will then return to their Army assignments to serve as advisors and instructors.

The training course will include purchasing; receiving, storing, and distributing foodstuffs; organization, control, inventories, and temperature of storerooms; detailed instruction in the preparation of all types of foods, including actual work in the kitchen; supervision; and costs and cost records.

Food Service Equipment Industry, Inc. Due to the expansion of the activities of the Food Service Equipment Industry, the post of executive secretary has been created. To fill this position, J. V. Hirlehey has been appointed. He will assume duties which, since the founding of the organization fourteen years ago, have been performed by the chairman and members of the board of directors. The


That Spread Reaches Junior Miss; 2-Inch Gain, Girdle Makers Say
NEW YORK, April 10 (UP)
Girdle designers conceded today that the average American junior miss has spread about two inches beyond the prewar model. To keep the girls from popping a seam, the makers will just have to
from buyers all over the Unit
States soon indicated that jun
misses from Syracuse to San F
cisco were spreading.
"The normal waist used
from 25 to 26 inches, wi
hips about 34 to 35 inches
Lidhern said.
The waists, for s
have remained the
gained
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This 1500-calorie booklet has wide popularity among the younger set because it is written in their own language and spiced with sprightly cartoons. It makes reducing easy with sample meal plans, low-calorie recipes, and even suggestions for "date" snacks.

You, as a dietitian, will approve it because it's nutritionally sound — providing the proteins, minerals and vitamins recommended by the Food and Nutrition Board, National Research Council.

USE THIS COUPON for a FREE copy of the teen-age diet along with the adult plan "Design for Reducing." Both booklets contain food lists and sizes of serving to simplify the planning of low-calorie meals.

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organization is composed of executives of companies which supply institutions, restaurants, clubs, and hotels with food preparation and sanitation equipment.

Labor Relations Booklet. Administrative dietitians may be interested in obtaining a copy of *Collective Bargaining: How to Make It More Effective*. It is a statement of policy by the Research and Policy Committee of the Committee for Economic Development and includes suggested procedure to be followed in contract making. It discusses the strike weapon and also makes recommendations for the government to use in revising its machinery for dealing with labor difficulties.

News of State Associations

Alabama Dietetic Association. The Alabama Dietetic Association held its spring meeting at the University of Alabama, Tuscaloosa, on April 26. In the morning, trips were arranged to the food service centers of the Veterans Hospital in Tuscaloosa and the University dining halls. At the luncheon meeting the speaker was Dr. Leon L. Rackow, who spoke on "Rehabilitation of Veterans." In the afternoon, Aileen Merwin spoke on "Teaching Dietetics in the Hospital" and Dr. Dorothy Ann Ehmke, University of Alabama, presented "Recent Advances in the Knowledge of Vitamin C."

A business meeting and election of officers was held. The new president, Mary E. Lyons, took office. The elected officers are: President-elect, Elna Daniels, University of Alabama; Vice-president, Mary A. Thomason, Baptist Hospital, Birmingham; Secretary, Mary Elizabeth Herbertson, University of Alabama; and Treasurer, Myrtle M. Letford, State Health Department. Elizabeth Seay, outgoing president, announced that the Executive Committee had made awards of one year's subscription to the JOURNAL to the outstanding dietetics senior of the year in each of the four institutions of higher learning in the state.

Arkansas Dietetic Association. Albert Pike Hotel, Little Rock, was the scene of the annual meeting of the Arkansas Dietetic Association on April 14. Mary Jane Scott, president, made a report of the year's activities and announced that printed recruiting material published by the A.D.A. had been sent to all colleges, universities, and high schools in the state. Nancy Burgess, Professional Education Section Chairman, discussed food laws in Arkansas, one of the projects of that section for the past year. Thelma Meharg, Community Nutrition Section Chairman, reported that one project of that section is an attempt to offer to hospitals in the state having no staff dietitian a consulting service.

Speakers at the meeting included Lillian Storms Coover, secretary of the national Association, who spoke on "An Effective State Dietetic Association." At the dinner meeting, Ruth Power, supervisor of the Arkansas School Lunch Program, spoke of the work of her organization, and Mrs. Coover spoke on the topic of "Public Relations."

New officers elected at this meeting are: President, Nancy Burgess, St. Vincent's Infirmary, Little Rock; President-elect and Vice-president, Thelma Meharg, School Lunch Service, State Department of Education. Olive Bost is being held as Treasurer for another year's service.

California Dietetic Association. The February meeting of the *San Diego Section* was held at the home of Deon James. Dr. Rieta Hough, pediatrician, as guest speaker gave an interesting and informal talk on "Nutrition and the Child." The March meeting was held at Scripps Nurses' Home, La Jolla, at which time reports of the mid-year council meeting held in San Francisco on February 14 were given.

The *Santa Barbara Section* held its March meeting at the Sansum Clinic, at which time Dr. Alfred E. Koehler discussed glucose tolerance curves and the dietary treatment of hypoglycemia. The April meeting took the form of a discussion of new textiles. Florence Spaulding, county home demonstration agent, was the guest speaker.

Colorado Dietetic Association. The semi-annual meeting was held April 19 at the Olin Hotel, Denver. Reports of various committees were made at the business meeting held in the morning. At the afternoon session three addresses were given: "Public Health in Colorado," by Dr. Roy M. Cleere, effecutive director of the Colorado State Board of Health; "The Effects of Dietary Constituents on Body Fluids," by Bernard Longwell, Ph.D., professor, Colorado School of Medicine; and "Association Activities" by Bertha Biltz, Administrative Adviser, American Dietetic Association. Guest speaker for the banquet in the evening was Dr. Bradford Murphy, Colorado School of Medicine, who spoke on "Mental Illness."

The Colorado Dietetic Association is making plans for publishing a bulletin and has already collected copies of other state associations' publications to study.

At this meeting Margaret Cowden Bernard, Veterans Administration, Denver, was elected President-elect, and Mary Margaret Vail, Colorado State Hospital, was chosen as the new secretary.

Connecticut Dietetic Association. On April 9 the Connecticut Dietetic Association held its spring meeting at St. Joseph College, West Hartford. The principal speaker of the afternoon was Sister Miriam Eveline, nutrition director, St. Vincent's Hospital, New York City, who spoke on menu planning for the expectant mother.

Delaware Dietetic Association. A dinner meeting was held on April 23 at the Hotel Rodney, Wilmington, by the Delaware Dietetic Association. Beulah Hunzicker, A.D.A. Treasurer, was guest speaker and brought news of the national Association's activities.

Florida Dietetic Association. A two-day convention was held in St. Petersburg on April 11 and 12. After registration, delegates were taken to the Penguin Club at Sunset Beach for luncheon, at which time, Mable MacLachlan, President of the American Dietetic Association, spoke on "The Dietitian of the Future." On the return trip, the Florida dietitians stopped at Bay Pines Veterans Hospital for a trip through the dietary department. At the afternoon business session the following new officers were elected: President, Eunice Grady, Miami; President-elect, Catherine Walters, Florida State College for Women, Tallahassee; Vice-president, Emily Lou Peeler, Tampa; and Secretary-Treasurer, Leona Rehbinder, Fort Meade.

A banquet was held Friday evening at which Rosemary Finnegan, Spanish teacher in the St. Petersburg high school, was the principal speaker.

The Saturday morning program roster of speakers included: Miss MacLachlan, who spoke on "Association Affairs"; Persis Penningroth, whose topic was "Newer Concepts in Child Nutrition and Feeding"; Dr. Robert Needles, who discussed "Low Sodium Diets in Hypertension"; and Vera Walker, who talked on "The Work of the Nutrition Consultant in the Florida Public Health Program."

It was decided to hold meetings in the future in the fall rather than in the spring, and the next convention is scheduled for November at Miami Beach.

Hawaii Dietetic Association. Reports of section chairmen of the Territory state that the Food Administration Section is currently engaged in the study of the food laws of the Territory, as they apply to institutional food service; the Community Nutrition Section is compiling a history of the Hawaii Dietetic Association; and the Diet Therapy Section has just completed a new *Diet Manual*. This *Manual* is a well organized piece of work and will be re-

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viewed in the Book Review Section of the JOURNAL in a later issue.

The Professional Education Section has been concentrating its efforts on recruiting. Its members have given talks at high schools on Career Days and have conducted trips through hospitals for interested students. The freshman orientation class of the University of Hawaii, numbering thirty-five students, devoted two hours a week last semester to vocations open to home economists, and several members of the Hawaii Dietetic Association presented vocational opportunities in the field of dietetics. Exhibits and posters showing eight possible vocations were prepared by students for the University's fortieth anniversary open house and were on display the day the high school seniors visited the campus. Other activities to recruit home economists and dietitians were conducted with the cooperation of the home economics group on the islands.

Indiana Dietetic Association. A winter meeting was held at the Propylaeum on Valentine's Day, at which the dietitian's contribution to the community and problems of recruiting were discussed.

The spring meeting of the Indiana Dietetic Association took place in Indianapolis on Friday and Saturday, April 25 and 26. At the opening luncheon Edward Snethen gave "Impersonations of Riley Characters." In the afternoon Ruby Clark, Purdue University, discussed "Market Trends"; Dr. George Bond spoke on "Cardiac Failure"; and Bertha Biltz, Administrative Adviser, American Dietetic Association, talked on "Association Activities." Tea was served at the Methodist Nurses' Home, followed by a banquet at the Marott Hotel. The banquet speaker was Wayne Guthrie, city editor, Indianapolis *News*, whose topic was "Ringside at Bikini." At the Saturday meeting, Dr. Matthew Winters conducted a forum on "New Trends in Nutrition," and Una Robinson, Ph.D., talked on "Meeting Nutrition Problems in Puerto Rico."

Iowa Dietetic Association. Iowa dietitians met at the Hotel Fort Des Moines, in conjunction with the Iowa Hospital Association, on April 22 and 23. The following topics were covered at the first day's meetings: "Pediatric Diets" by Dr. Perry P. Amick of Des Moines; "Procedure in Control of Diabetic Patients on Globin Zinc Insulin," by Dr. A. A. Toubes, Des Moines; and "Report of Continuation School in Clinical Diets at the University of Minnesota," by May Morris, Veterans Administration.

On Wednesday, the second day, Wilma Philips Stewart, food editor of the Des Moines *Register and Tribune*, talked on "Writing a Food Column." W. L. Strunk, executive director, Veterans Hospital, Des Moines, discussed "Personnel Problems of the Veterans Administration Hospital," and J. Phil Starbuck, personnel manager, Meredith Publishing Company, covered "Personnel Administration." Three reports on graduate research being conducted at Iowa State College and the University of Iowa were also given.

Kansas Dietetic Association. Members of the *Kansas City Dietetic Association* are participating in a series of lectures on psychiatric problems in dietetics which are being conducted by Dr. Sylvia Allen.

Kentucky Dietetic Association. The following new officers of the Kentucky Dietetic Association were elected at the spring meeting held March 21 and 22 in Lexington: President, Emily Bennett, Central Dairy Council, Louisville; President-elect, Elizabeth Taylor Banes, Lexington; Vice-president, Helen Koons, Massie Memorial Hospital, Paris; Treasurer, Ruth Boyden, University of Kentucky, Lexington; and Secretary, Mary King Burrier, Eastern Kentucky State Teachers College, Richmond.

Maryland Dietetic Association. The annual meeting was held on May 3 at The Johns Hopkins Hospital. Janet Engebretsen, president, made the welcoming address and was followed by Alice Fenno, A.D.A. Food Administration Section Chairman, who discussed "Public Relations and the American Dietetic Association." Other speeches dealt with the following subjects: "Organization and Activities of a Food Clinic in a Teaching Hospital," by Eloise R. Trescher, director, Food Clinic, The Johns Hopkins Hospital; "Diet in Mental Illness," by Dr. Frederick MacCurdy, commissioner, Department of Mental Hygiene, New York State; "The Function of the Personnel Department in Hospital Management," by M. J. Wise, Jr., of C. R. Holton Associates, New York City; and "A Program for One-Day Conferences in Hospital Food Service" by S. Margaret Gillam, dietary consultant, American Hospital Association.

Michigan Dietetic Association. The regular business meeting opened the convention of the Michigan Dietetic Association held April 25 and 26 at the Morton Hotel, Grand Rapids. At the welcoming luncheon, Ralph F. Windoes presented an illustrated lecture on the history of Michigan. In the afternoon Ruth Seaton Hicks of the Frozen Food Foundation, Syracuse, New York, spoke on frozen foods, after which the remainder of the afternoon was devoted to demonstrations showing how to make meals and dining rooms attractive. The dinner speaker that evening was Ida Jean Kain of King Features Syndicate, whose subject was "Cooking on the Two Front Burners."

On Saturday, the second day of the convention, Dr. W. L. Mallmann discussed food sanitation and food poisoning; Hildur Hellberg of Chicago talked on "Personnel Relationships"; Dr. Marion Bryant spoke on "Low Sodium Diets—Hypertension"; and a symposium on poliomyelitis was conducted by Dr. Leland Swenson of Grand Rapids. At the Saturday luncheon Lillian Storms Coover, A.D.A. Secretary, brought messages from the national Association. Interior decoration, colors, and new furniture were discussed in the afternoon.

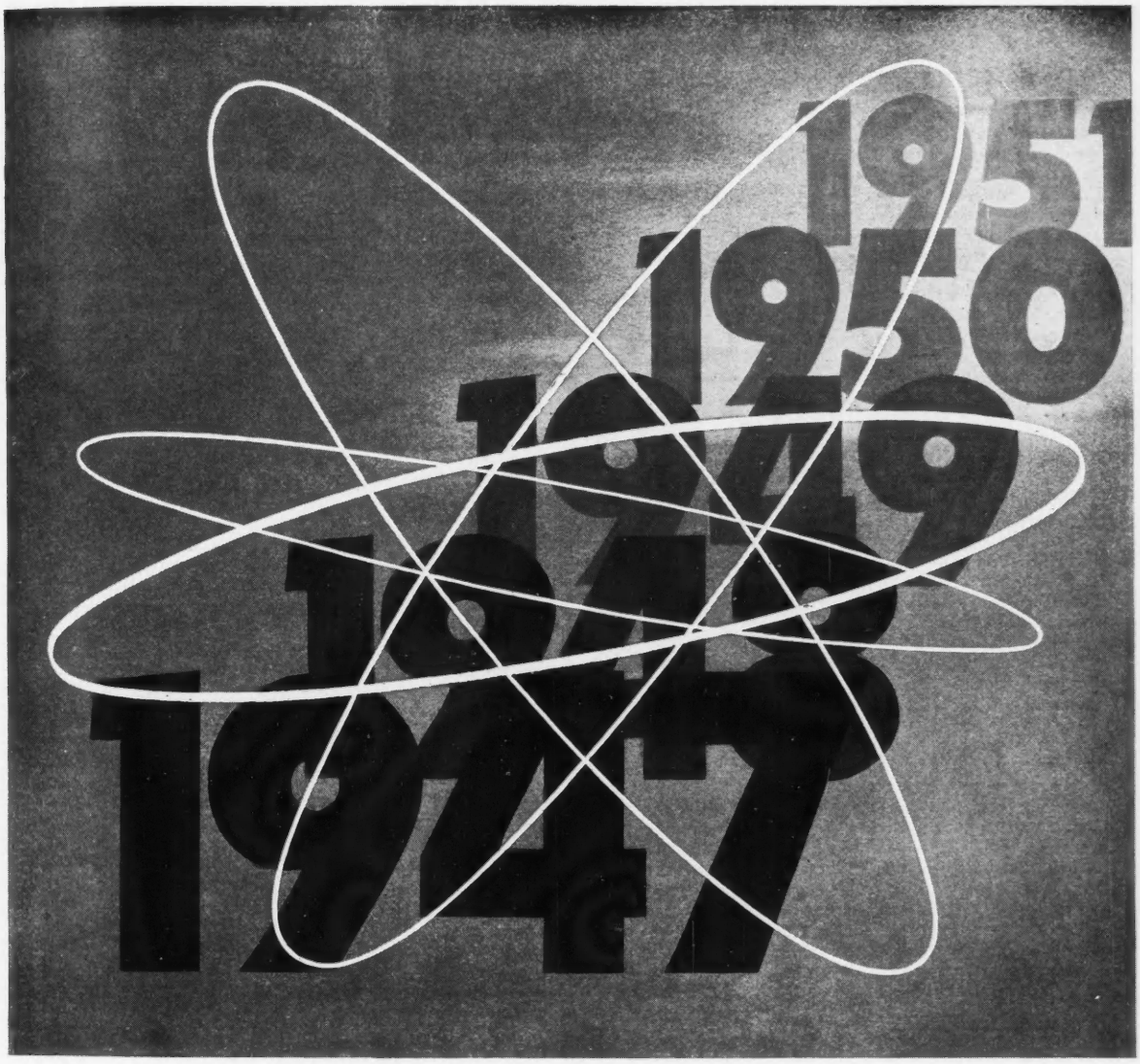
Mary Riste, chief dietitian, Butterworth Hospital, Grand Rapids, was in charge of the convention arrangements, and Helen C. Feuerstein, chief dietitian, Blodgett Memorial Hospital, served as program chairman.

Winning Pendergast has been appointed to fill the unexpired term of the Vice-president, Alice H. Smith, who has left Michigan to take up duties as head of the Children's Bureau nutrition program on the West Coast.

Minnesota Dietetic Association. The spring meeting of the Minnesota Dietetic Association was held in Minneapolis on May 16 and 17 as a joint meeting with the Minnesota Hospital Association. Joan Mary Woodhill, of the Royal Prince Alfred Hospital, Sydney, Australia, told of her experiences as chief dietitian in Australia. H. S. Adams chief, Bureau of Environmental Hygiene, Minneapolis, spoke on "The Meaning and Value of Sanitation in the Food Department," and was followed by Dr. Alexander G. Dumas, assistant professor of psychiatry and nuerology, University of Minnesota, whose topic was "Mental Hygiene." Bertha Biltz, Administrative Adviser, American Dietetic Association, spoke on "What's New in Dietary Departments."

The program for the second day of the meeting included the following talks: "What Is New in Diet Therapy?" by Alice Irmisch, dietitian, Mayo Clinic, Rochester; "Personnel Programs with Reference to the Dietary Department," by James W. Stephan, associate professor, University of Minnesota; "Training of Employees" by Virginia M. Bailey, Veterans Administration; "Problems Encountered in Converting to a Pay Cafeteria" by Teresa Guiliani, St. Joseph's Hospital, St. Paul; "Problems Involved in Changing from Broken Shifts to Straight Hours" by Lillian Satrum, Fairview Hospital, Minneapolis; and "Classes in Dietetics for Medical Interns," by Mrs. James Anderson, Bethesda Hospital, St. Paul.

Mississippi Dietetic Association. On April 15 the Mississippi Dietetic Association met in Jackson at the Heidel-



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berg Hotel. Mable MacLachlan, A.D.A. President, brought news from the national office; Dr. D. V. Galloway, executive director, Mississippi Commission on Hospital Care, spoke on "Mississippi's Hospital Program"; Eleanor Wilson, state supervisor, School Lunch Program, discussed "Developments in the School Lunch Program"; and Eunice Cormack, Mississippi State College for Women, talked on "State Food Service Laws and Dietetics as a Profession."

New officers elected were: President, Mary L. Gill, Vicksburg; President-elect, Mary Ida Flowers, Mississippi State College for Women; Vice-president, Mary Stansel Harvey, Ruleville; Secretary, Nell Cooke, Veterans Hospital, Biloxi; and Treasurer, Janette Habas, Natchez.

Missouri Dietetic Association. Conie Foote has been appointed the new editor of *Missouri Mutterings*, the official bulletin of the Missouri Dietetic Association.

At the April 7 meeting of the *St. Louis Dietetic Association* the principal speaker was Ruth Kahn, chief dietitian, Veterans Hospital, Hines, Illinois, who spoke on "Standards of Food Service." As guests at this meeting, members of the Home Economics Women in Business group, home economics teachers, and representatives of the restaurant and hotel associations and of the stewards and caterers unions were invited.

New York Dietetic Association. The *Greater New York Dietetic Association* recently entertained Margaret Broatch of London, who is visiting this country and Canada for six weeks, and who brought greetings from the dietitians of England.

Ohio Dietetic Association. At the April meeting of the *Cleveland Dietetic Association* it was decided that the Association should join the Inter-city Club Council. This is a new group being formed in Cleveland to develop leaders among the women's organizations and bring about greater participation of women in city and national affairs. The Cleveland Dietetic Association, as well as other participating groups, will send two representatives to the Council. Each representative after the first year will serve for two years, one being elected each year. The recruiting committee has planned a "Dietetians' Week" for the near future, which will be publicized by radio broadcasts and newspaper stories.

The April meeting of the *Cincinnati Dietetic Association* was a cooperative effort with the Cincinnati Home Economics Association in recruiting for home economists. The subject given to the meeting was "Tips for the Teeners." Among the speakers were the following: Mary E. McKelvey, who represented the hospital dietitian; Eva Ylvisaker, who represented child health education; Fern Storer, who spoke for the welfare worker; Mary Belle Burnett, who covered the subject of the home economist in business; and Mary Benham, who talked on opportunities in the restaurant business. Other phases presented were: teaching and department store opportunities for home economists.

An interesting study in contrasts was afforded at a dinner sponsored by a frozen foods retailer in Cincinnati recently. One bushel of fresh peas yielded 7½ lb. when shelled and required 4 hr. of labor for that operation. The market cost of the peas was $4.50. A similar amount of frozen peas, ready for use and with no shells to dispose of, cost $2.25. The market fresh peas could not reach Cincinnati from the point of production in less than 300 hr., whereas freezing is often done in the fields.

In the recruiting slogan contest sponsored by Cincinnati dietitians, "Choose a profession you can use every day" was one of the suggestions received. Another was: "Dietetics—the Open Road to Golden Opportunities." The winning slogans will be used in the local recruiting program, which will include some radio time. First prize in the contest will be a year's dues to the American Dietetic Association. Second prize will be a copy of *Quantity Food Service Recipes* by Adeline Wood, and third prize, a copy of the *Handbook of Diet Therapy* by Dorothea F. Turner.

Pennsylvania Dietetic Association. The *Philadelphia Dietetic Association* was represented on the advisory council for a luncheon recently sponsored by the Sentry Club, at which Louisa Yim was the guest of honor. Miss Yim, who comes from Korea, may be compared to our Susan B. Anthony, for she has done much in her own country to forward the liberation of women. She is one of Korea's representatives at the United Nations meetings and was the organizer of the Women's Nationalist Party of Korea, which now has 100,000 members. The luncheon in Philadelphia was an important event in that city.

Tennessee Dietetic Association. The spring meeting was held on April 4 at Gatlinburg. Out of state visitors included Anna Tracy, past President of A.D.A., and Mary Harrington of Detroit.

Texas Dietetic Association. The "Year Book" of the *San Antonio Dietetic Association* was recently received in the JOURNAL office. According to this booklet, the organization holds regular meetings on the third Wednesday of every month except June and August. The group has sixteen active members and thirty-six associate members. Officers are: President, Julia Ord King; Vive-president, Margaret Sauerberg; and Secretary-Treasurer, Doris Bickart.

Virginia Dietetic Association. Mable MacLachlan, A.D.A. President, was guest at the spring meeting of the Virginia Dietetic Association on April 3 in Roanoke. This meeting was held jointly with the Virginia-Carolinas Hospital Conference. Other speakers on the program were: Bertha Nettleton, head of the Consumer Service Department of General Foods Corporation, who spoke on "Quality Food Preparation"; Anna Bines, National Live Stock and Meat Board, Chicago, whose topic was "Meat Cookery in Institutions"; and Bertlyn Bosley, whose subject dealt with "The Nutritionist in a Public Health Program." Janet Engebretsen, The Johns Hopkins Hospital, Baltimore, spoke on hospital dietitians' problems, and was followed by Margaret Fitzhugh who discussed school lunch programs. Other speakers talked on the results of a survey of dietetics courses in Virginia and on state food laws.

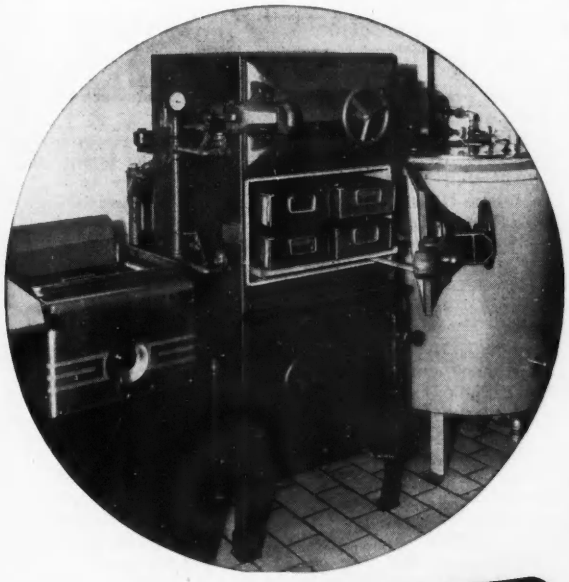
West Virginia Dietetic Association. The sixth annual meeting of the West Virginia dietitians took place on May 3 at the Morgan Hotel, Morgantown, West Virginia. Subjects of speeches were: "Dietary Treatment for General Surgery," by Dr. Glenn Ashworth, Morgantown; "Coordination and Cooperation of the Dietary Department and the Nursing Department," by Kathryn R. Dooley, director of nurses, Monongalia General Hospital, Morgantown; and "The Responsibilities of the Dietitian as Related to the Administrator, the Nursing Department, and the Medical Staff," by Margaret A. Neubert, president, Pennsylvania Dietetic Association. Ona Frances Stinson reported on the Institute on Design, Construction, and New Equipment sponsored by the American Hospital Association and held in December in Chicago.

Wisconsin Dietetic Association. On March 29, the Wisconsin Dietetic Association held its annual conference. Mable MacLachlan spoke on "Association Affairs." Others on the program were: Dr. Edgar S. Gordon, who discussed "Some Recent Developments in the Pathogenesis and Treatment of Diabetes"; Dr. Michael Kasak, whose subject was "The Psychology of Feeding People"; and Dr. Genevieve Stearns, who spoke on "Nutrition and Growth." During the meeting a symposium on the status of the dietitian from the administrator's viewpoint was conducted.

News about Members

The following members of the A.D.A. have recently accepted new positions and appointments:

Helen McCumber Amos, recently separated from the



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Army, is now at Rochester General Hospital, Rochester, New York.

Helen Baughman, formerly on the dietary staff at The Johns Hopkins Hospital, Baltimore, is now chief dietitian and course director at Peter Bent Brigham Hospital, Boston. She recently completed work on her master's degree from Teachers College, Columbia University, New York City.

Marjorie Benson has resigned from Bartron Hospital, Watertown, South Dakota, to accept a position on the dietary staff at Sioux Valley Hospital, Sious Falls, South Dakota.

Margaret Calahan is now at the University of New Hampshire, Durham.

Betty F. Carr is no longer at Hospital for Special Surgery, New York City. She is now assistant dietitian at the University of Chicago Clinics, Chicago.

Virginia Crawford recently accepted a position as staff dietitian at Baptist Hospital, Birmingham, Alabama, following her resignation from Vanderbilt University Hospital, Nashville, Tennessee.

Sally Terry Davis, former head dietitian at Lynchburg General Hospital, Lynchburg, Virginia, is now doing teaching and therapeutic work at Hamlet Hospital, Hamlet, North Carolina.

Katherine DeWitt has left Portland, Oregon, and is now at the U. S. Marine Hospital, Norfolk, Virginia.

Leah M. Dunton recently became head dietitian at Whidden Memorial Hospital, Everett, Massachusetts. Previously she was at Worcester City Hospital, Worcester, Massachusetts.

Elizabeth Elliott is no longer connected with the University of Kansas Hospitals, Kansas City, Kansas. She is the new teaching dietitian at John Sealy College of Nursing, Galveston, Texas.

Aline Erickson became dietitian at Lake View Hospital, Danville, Illinois, on April 1. She recently resigned from Outlook Sanitarium, Urbana, Illinois.

Marjorie B. Farrar, formerly at Charlotte Memorial Hospital, Charlotte, North Carolina, has accepted a position at Colorado General Hospital, Denver.

Patricia Flynn, employed by Eastern Airlines, Inc., has been transferred from New York City to Logan International Airport, Boston.

Esther Rae Gerber has moved to Fort Wayne, Indiana, where she is dietitian at Lutheran Hospital.

Kathleen Anne Golden has left Cazenovia, New York, and is now at Nathan Littauer Hospital, Gloversville, New York.

Helen K. Griffith became assistant dietitian at Western Electric Company, Chicago, on May 1. Previously she was at Bauch and Lomb Cafeteria, Rochester, New York.

Astrid Christiansen Hansen has accepted a position at St. Joseph Mercy Hospital, Pontiac, Michigan.

Margaret Henney is the new assistant dietitian at Robert Packer Hospital, Sayre, Pennsylvania.

Charlotte Henry, recently discharged from the Army, is assistant dietitian in the residence hall management department at the University of Missouri, Columbia.

Phyllis Sullivan Howe recently resigned from Mills Memorial Hospital, San Mateo, California, to accept a position at Samuel Merritt Hospital, Oakland, California.

Helen F. Jensen has left Passavant Memorial Hospital, Jacksonville, Illinois, to accept a position as assistant home economist for the Roth Packing Company, Waterloo, Iowa.

Margaret L. Johnson became assistant administrative dietitian at Colonial Hospital, Rochester, Minnesota, following her resignation from Memorial Hospital, Houston, Texas.

Dorothy Kiebrick is the new dietitian-manager of Keating Hall cafeteria at Fordham University, New York City. She has previously been employed at Bushwick Hospital, Brooklyn, New York.

Mildred Grace Klahn has resigned from Evangelical-Deaconess Hospital, Marshalltown, Iowa, and is now at Currier Hall, State University of Iowa, Iowa City, Iowa.

Helene Hynes Landberg, former chief dietitian at Chicago Welfare Department, Chicago, is now at Landbergs' Kenfield Lodge, Hackensack, Minnesota.

Katherine Lees on May 1 became chief dietitian at Conemaugh Valley Memorial Hospital, Johnstown, Pennsylvania. Previously she had been administrative dietitian at the University of Chicago Clinics, Chicago.

Mary T. McInerney, recently separated from the Army, is the new therapeutic dietitian at Pennsylvania Hospital, Philadelphia.

Margaret Mahoney has left Chicago to become manager of Residence Halls, Michigan State College, East Lansing.

Emilia Mainello recently moved from Trinidad, Colorado, to Syracuse, New York, where she is with the American Red Cross.

Edythe Morris, upon completion of her dietetic internship, Allegheny General Hospital, became assistant dietitian at the Hospital for Joint Diseases, New York City.

Bernadine Nelson is now at St. Elizabeth's Hospital, Lincoln, Nebraska.

Carolyn Jean Nelson, after completing her year's training as a dietetic intern at Massachusetts General Hospital, Boston, became assistant research dietitian at Oakland Naval Hospital, Oakland, California.

Iola Nicola is no longer at Harbor View Hall, Seattle, Washington. She recently accepted a position at Mather Memorial Hospital, Port Jefferson, New York.

Rebecca Parkhurst has left Norwalk General Hospital, Norwalk, Connecticut, to accept a position at Faulkner Hospital, Jamaica Plain, Massachusetts, as administrative dietitian.

Jennie Pecevich has resigned her position as chief dietitian at Christ Hospital, Jersey City, New Jersey, to become chief dietitian at Flushing Hospital, Flushing, Long Island, New York.

Erline Churchill Peterson, recently a dietietic intern at University of Iowa Hospitals, Iowa City, is now relief dietitian at the University of Illinois Research and Educational Hospitals, Chicago.

Loretto Scanlon recently became chief dietitian at U. S. Marine Hospital, Chicago.

Myra Belle Shaffer has resigned from St. Francis Hospital, San Francisco, to accept a position at The Johns Hopkins Hospital, Baltimore.

Mary Mabel Sherrill is the new "Elinore Alberts," home service director of the West Bend Aluminum Co., West Bend, Wisconsin. She was recently separated from the WAVES after forty months of service.

Betty Snyder became dietitian at Victory Memorial Hospital, Waukegan, Illinois, on April 16. Previously she had been an Army dietitian.

Jean Springer, until recently a member of the dietary department of Michael Reese Hospital, Chicago, has accepted a position at Foundation Hospital, New Orleans, Louisiana.

Phyllis Traynor, formerly at Alum Rock Sanatorium, San Jose, California, has accepted a new position at Merced General Hospital, Merced, California.

Jeanette Gantz Trussell is now employed as home service director, Gem City Appliance Inc., Dayton, Ohio.

Marie Vance became assistant dietitian at Norwegian-American Hospital, Chicago, upon completion of her dietetic internship at Cook County Hospital, Chicago.

Julia J. Wallace has left Norris, Tennessee, to become a member of the dietary department at St. Thomas Hospital, Nashville, Tennessee.

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Mary E. Walton is now dietitian at the Edwin Gould Foundation, New York City. Previously she was at Brooklyn Thoracic Hospital, Brooklyn, New York.

Nellie Ruth Ward recently accepted a position at Huntington Memorial Hospital, Pasadena, California, following her resignation from White Cross Hospital, Columbus, Ohio.

Adelaide Weber is the new chief dietitian, Yonkers Professional Hospital, Yonkers, New York.

Mary Olga Williams recently resigned from Morrell Memorial Hospital, Lakeland, Florida, and is now dietitian at Georgia Warm Springs Foundation, Warm Springs, Georgia.

Ruth J. Williams, recently discharged from the Army, is now dietitian for the college cafeteria, Vanderbilt University, Nashville, Tennessee.

Elizabeth J. Yeo on March 13 became therapeutic dietitian at the Doctors Hospital, Seattle, Washington. She has resigned from Montefiore Hospital, New York City.

Announcements of the following marriages have been received in the JOURNAL office:

Kathleen Bolingbroke, following her marriage to Gordon H. Marx, accepted a position as dietitian at MacDonald House, University Hospitals, Cleveland.

Marion Buck recently became Mrs. Thomas J. Wilson and has resigned her position at Cleveland Clinic Hospital, Cleveland, to move to Chanute, Kansas.

Dorothy Anne Chapman, formerly at Delaware Hospital, Wilmington, is now Mrs. Robert E. Fultz and is employed as dietitian at St. Elizabeth's Hospital, Richmond, Virginia.

Marie Elizabeth Dohm was married to Henry Augustus Brown on April 29. The couple will make their home in Santa Barbara, California.

Rita Donovan recently became the bride of Bertron C. Cole and will continue to live in Chicago.

Mary Gronlund is now Mrs. Robert L. Taylor. She has resigned as ward supervising dietitian at Cook County Hospital, Chicago, to accept a position as staff dietitian at U. S. Marine Hospital, Staten Island, New York.

Anne B. Hallick (née Begeny) was recently married and has left her position at Veterans Hospital, Roanoke, Virginia, to move to Pittsburgh.

Sally Linke, formerly therapeutic dietitian at Cottage Hospital, Santa Barbara, California, is now Mrs. Joseph Urban.

Ellen McMurray was recently married to Fred Brasted and will live in Chickasha, Oklahoma. She has previously been assistant to the director of Residence Halls at the University of Missouri, Columbia.

Edith Manford, president of the Florida Dietetic Association, was recently married to Colonel L. G. Smoak of Chambersburg, Pennsylvania.

Jane Wells Miller will continue to live in Detroit following her marriage on April 19 to Robert T. Trombly.

Aileen E. Morrison is now Mrs. L. P. Huther of Rochester, New York.

Ruby Motley, following her discharge from the Army, was married to Commander C. R. Armbrust who is stationed at the Philadelphia Navy Base, Philadelphia.

Betty Jane Myrbo is no longer at Letterman General Hospital, San Francisco. She is now living in Baltimore with her new husband, Robert A. Propf, Jr.

Donna Mary Oeffling recently became the bride of Jerry S. Strock. The Strock's are at home in St. Cloud, Minnesota.

Marvis Snell (née Reeder) is now married and living in Palmetto, Florida.

Barbara J. Washburn on March 15 became Mrs. John J. Hamm. Mrs. Hamm was recently separated from the Army and is now at home in Tillicum, Washington.

June Wright (née Warren) was married on February 9 and is living in Pittsburgh.

News of Advertisers and Exhibitors

In July, *Salvajor Company* plans to put on the market a small-size Salvajor, designated as "SM-1." This new model has been developed for use in small dishwashing departments as a prewasher and silverware-saver... Early in April, *H. J. Heinz Company* announced that it would contribute one million packages of Heinz baby food to the hungry children of war-torn countries, and in addition offered to match package for package the purchases of American mothers during the week of April 6. So great was the response that the company will contribute a total of three million packages. The first shipment was made on April 16. Distribution will be made through the American Friends Service Committee, a Quaker relief organization. The Quakers have stated that most of the packages will go to the neediest children of Austria, Poland, and the French zone of Germany . . . *General Foods* has established heat and humidity controlled warehouses in all of its sales districts to provide the proper storage of Certo and Sure-Jell pectin products. This makes possible buy-as-you-go ordering by users who buy in large quantity . . . *General Foods* has also announced a reorganization of its Sales Division, which will now operate with five principal regions instead of four. New Southeastern and Southwestern regions have been created from former Southern and Central divisions. To meet personnel needsoccasioned by the reorganization, a number of promotions and personnel changes have also been made... Clarence Francis, chairman of *General Foods,* in a speech made on April 23, said that he believed that the peak of food prices had been reached and that a downward trend may now be expected. He also stated that he believed that the whole food industry can expect stiff competition . . . In line with that thought, *General Foods* has already instituted a postwar premium plan to increase sales to institutional and restaurant buyers who purchase in large quantity. This was felt necessary because a survey showed that only four products are ever demanded by brand name in a restaurant. Thus the restaurant or institutional buyer may serve his patrons any brand which in his opinion meets his requirements. To spur purchase of General Foods products, therefore, premiums are now being offered to large quantity buyers, and an attractive premium catalog is available.

Addition of Ascorbic Acid to Fruit Juices

W. B. Esselen, Jr., J. J. Powers, and Carl R. Fellers of Massachusetts State College have recently reported that ascorbic acid added to apple, cranberry, and grape juices is quite stable. Furthermore, the ascorbic acid has been found to have a favorable effect on color retention during storage. With apple juice, the ascorbic acid also has a favorable effect on the flavor.—*Food Field Reporter, February 17, 1947.*